JVC

# SERVICE MANUAL

MODEL

# CD-1636/C
# CD-1635MarkII

## (CD-1635-2A/B/E/U)

## PORTABLE STEREO CASSETTE DECK

No. 4145
May 1976

# Index



# Specifications

| | | |
|---|---|---|
| Type | : | Portable stereo cassette deck |
| Track system | : | 4-track, 2-channel |
| Cassettes | : | C-30, C-60, C-90 |
| Tape speed | : | 4.8cm/sec |
| Frequency response | : | |
| Chrome *1 | | 25~18,000Hz (Nominal)<br>30~16,000Hz (Typical) |
| Regular *2 | | 25~17,000Hz (Nominal)<br>30~15,000Hz (Typical) |
| | | Supasses DIN 45500<br>*1 TP-18 or Equivalent<br>*2 QP-12 or Equivalent |
| Signal-to-Noise ratio | : | 54dB (JIS)<br>The S/N is improved by 5dB at 1kHz and by 10dB above 5kHz with ANRS on.<br>62dB with ANRS<br>(DIN 45500, weighted) |
| Effect of Super ANRS (Normal tape) | | |
| Improvement of Signal-to-Noise ratio | : | the same as with ANRS |
| Improvement of frequency response | : | 0VU recording; 6dB at 10kHz<br>+5VU recording; 12dB at 10kHz |
| Improvement of distortion | : | 0VU recording; 3% or less at 10kHz<br>+5dB recording; 3% or less at 10kHz |
| Wow and flutter | : | 0,08% (WRMS)<br>0,20% (DIN 45511) |
| Crosstalk | : | 65dB |
| Harmonic distortion | : | 1.2% (standard tape) |
| Bias | : | AC bias (95kHz) |
| Erasure | : | AC erasure |
| Heads | : | 2 heads<br>SA head for recording/playback and ferrite head for erasure |
| Motor | : | DC coreless motor |
| Recording time | : | 2 x 30 minutes with the C-60 cassette |
| Fast wind time | : | 90 sec (with the C-60 cassette) per track |
| Rewind time | : | 90 sec (with the C-60 cassette) per track |
| Semiconductors | : | IC; 5, Transistors; 35, Diodes; 29, SCR; 1 |
| Input jacks | : | Mic jack; 2<br>Max. sensitivity; 0.14mV (–75dBs)<br>Matching impedance; 200Ω~10kΩ<br>Input jack; 2<br>Max. sensitivity; 78mV (–20dBs)<br>Input impedance; 100kΩ |
| Output jacks | : | Output jack; 2<br>Output level; 500mV (fixed)<br>Output impedance; 2kΩ<br>Matching load impedance; 50kΩ or more<br>Headphone jack; 1<br>Output level; 0.3mW<br>Matching impedance; 8Ω |
| Recording connector (REC/PB) | : | Min. input level; 11mV (–37dBs)<br>Input impedance; 9.2kΩ<br>Output level; 500mV<br>Output impedance; 2kΩ<br>Matching load impedance; 50kΩ or more |
| Speaker | : | Output; 1.2W (distortion, 10%)<br>Impedance; 4Ω<br>Diameter; 10cm |
| Power supply | : | DC 9V (U1 x 6)<br>External DC power; 8~16V<br>AC power;<br>120V, 60Hz for CD-1636/C<br>240V, 50Hz for CD-1635-2A/B<br>220V, 50Hz for CD-1635-2E<br>100V,110~120V,200V<br>50/60Hz for CD-1635-2U |
| Power consumption | : | 9W |
| Battery life | : | Approx. 12 hours of continuous recording (on super type batteries)<br>Approx. 5 hours of continuous recording (on regular type batteries) |
| Dimensions | : | 14-1/4(width) x 3-7/8(height) x 9-1/2(depth) in. |
| Weight | : | 11.5 lbs (including 6 batteries) |

Design and specifications are subject to change without notice.

# Features

* High Performance
* Power-saving Design
* Coreless Motor
* Built-in ANRS (U.S. Pat. 375 7254 and 376 9612) and Super ANRS
* Sen-alloy Head
* Full Auto Stop
* Tape Select Switches
* High-linearity Amplifier
* High-precision Mechanisms
* Input Select Switch and Microphone Attenuator
* Master Recording Volume Control
* External DC Power Connection Terminal
* Built-in Large Speaker
* REC MODE Select Switch
* Front Panel Protectors

# Controls and Connections

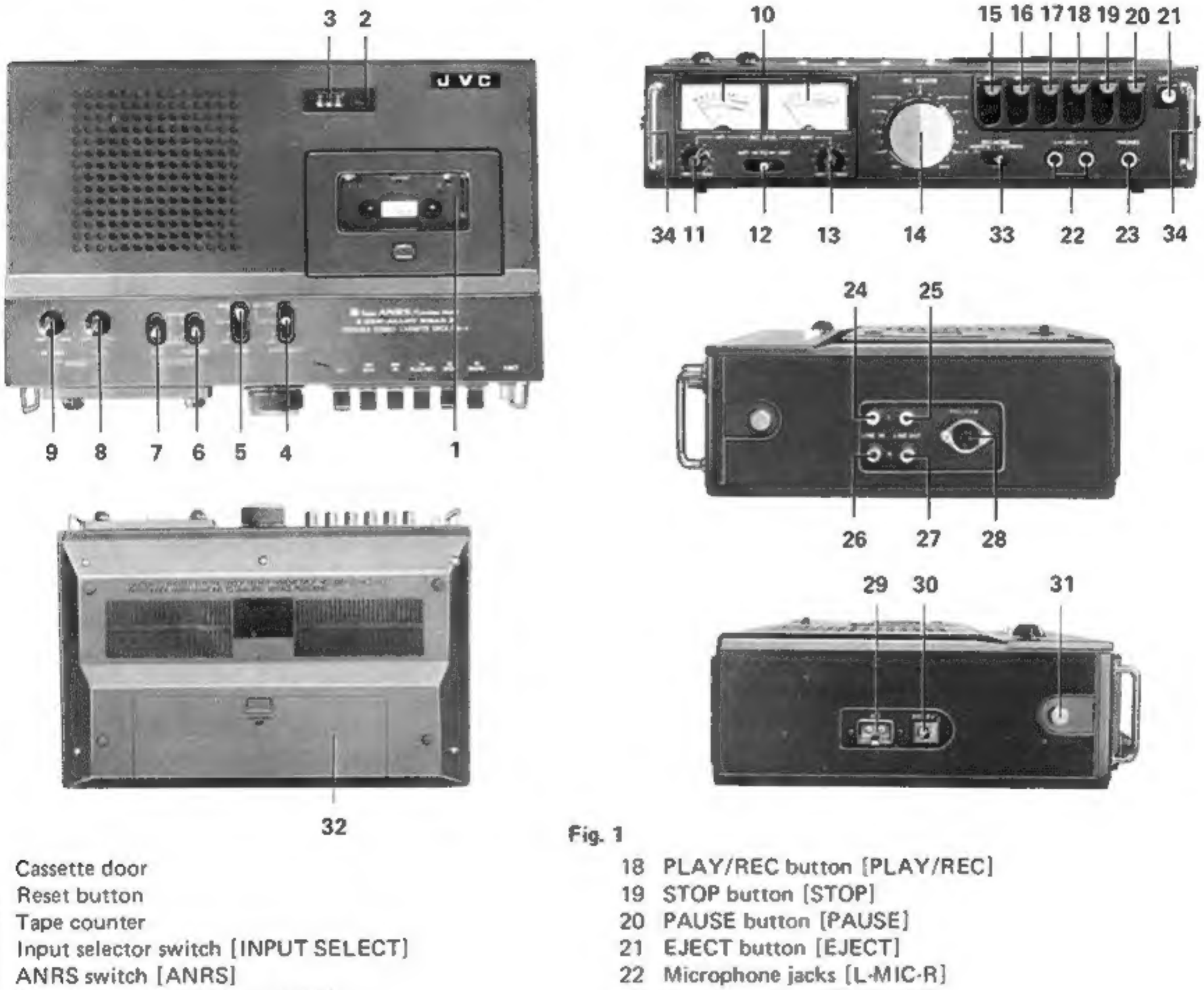



Fig. 1

1 Cassette door
2 Reset button
3 Tape counter
4 Input selector switch [INPUT SELECT]
5 ANRS switch [ANRS]
6 Equalizer switch [EQUALIZER]
7 Bias switch [BIAS]
8 Speaker tone control [TONE]
9 Speaker volume control [PB LEVEL]
10 Level meters
11 Left recording level control [REC LEVEL]
12 Check switch [batt/VU light]
13 Right recording level control [REC LEVEL]
14 Master recording volume control [REC MASTER]
15 Record button [REC]
16 Rewind button [REW]
17 Fast forward button [FF]
18 PLAY/REC button [PLAY/REC]
19 STOP button [STOP]
20 PAUSE button [PAUSE]
21 EJECT button [EJECT]
22 Microphone jacks [L-MIC-R]
23 Headphone jack [PHONES]
24 Left auxiliary input jack [LINE IN]
25 Left auxiliary output jack [LINE OUT]
26 Right auxiliary input jack [LINE IN]
27 Right auxiliary output jack [LINE OUT]
28 Record/playback DIN jack [REC/PB]
29 AC input terminal [AC]
30 DC input terminal [DC 12V]
31 Shoulder belt holder
32 Battery cover
33 REC MODE select switch
34 Front panel protectors

# New Techniques

## Sen Alloy Head

**Features of the SEN-ALLOY head**

1. Highly resistant to wear and long in service life
   The SEN-ALLOY head has a service life as long as that of a ferrite head because the area of it which comes into contact with the tape is made of SENDUST ALLOY with a hardness comparable to that of ferrite. Additionally, unlike ferrite, SENDUST ALLOY is not subject to chipping cracking, so that a long life and stable performance are assured.

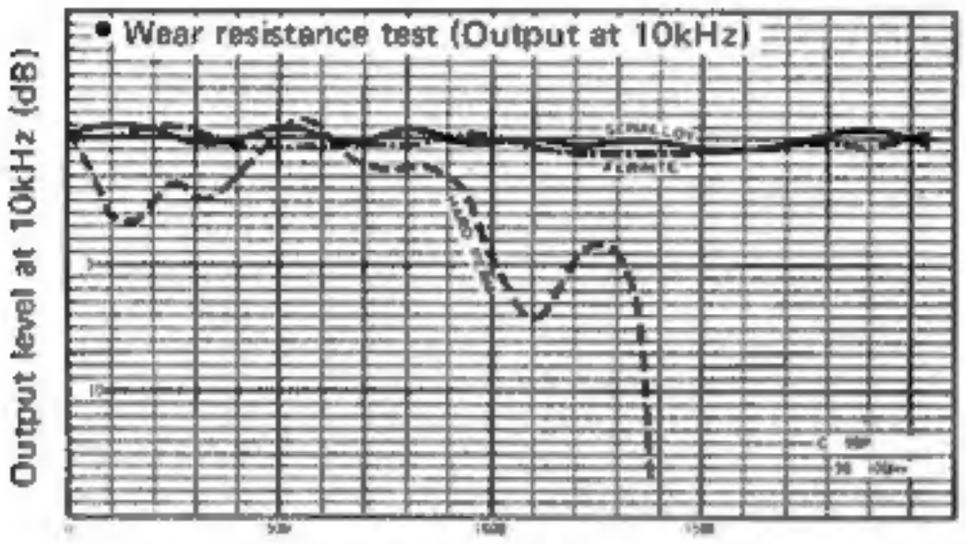



Fig. 2

2. Excellent overall sound quality
   Because the core on which the coil is wound is made from permalloy and the area which comes into contact with the tape is made from SENDUST ALLOY, high gap accuracy can be assured as with ferrite heads, so that frequency response at high frequencies is sufficiently extended. As the maximum flux density of the SENDUST ALLOY used for the gap section is much higher than that of ferrite and higher than that of permalloy, distortion of high level signals in recording is reduced and linearity is improved. This gives big advantages over ferrite heads when using the new high performance tape and chrome tape. From the viewpoint of overall sound quality, the sound is not so hard as that from ferrite heads; it is natural, high resolution sound like from permalloy heads.

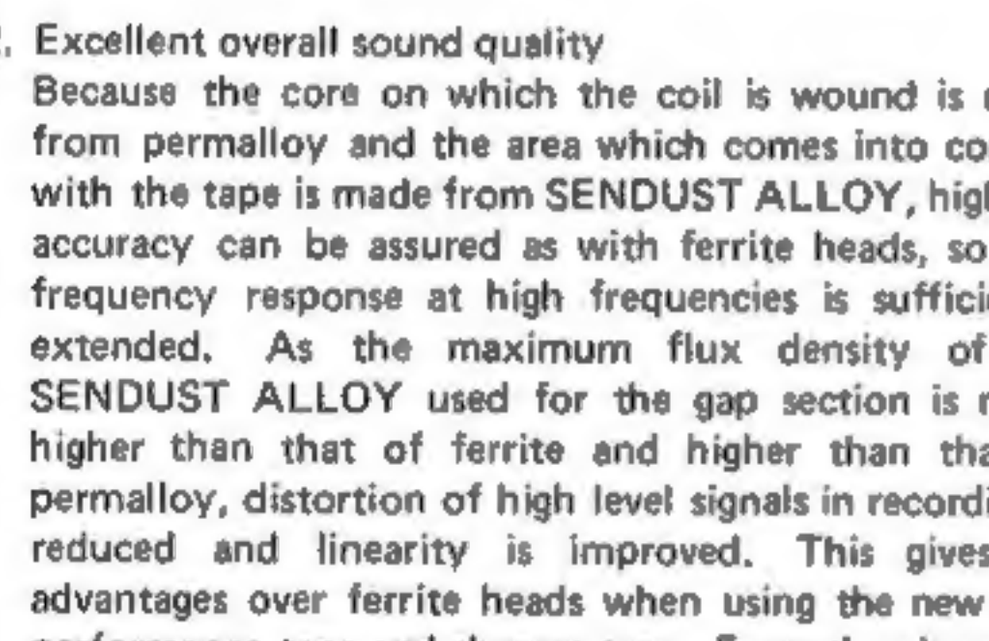



Fig. 3

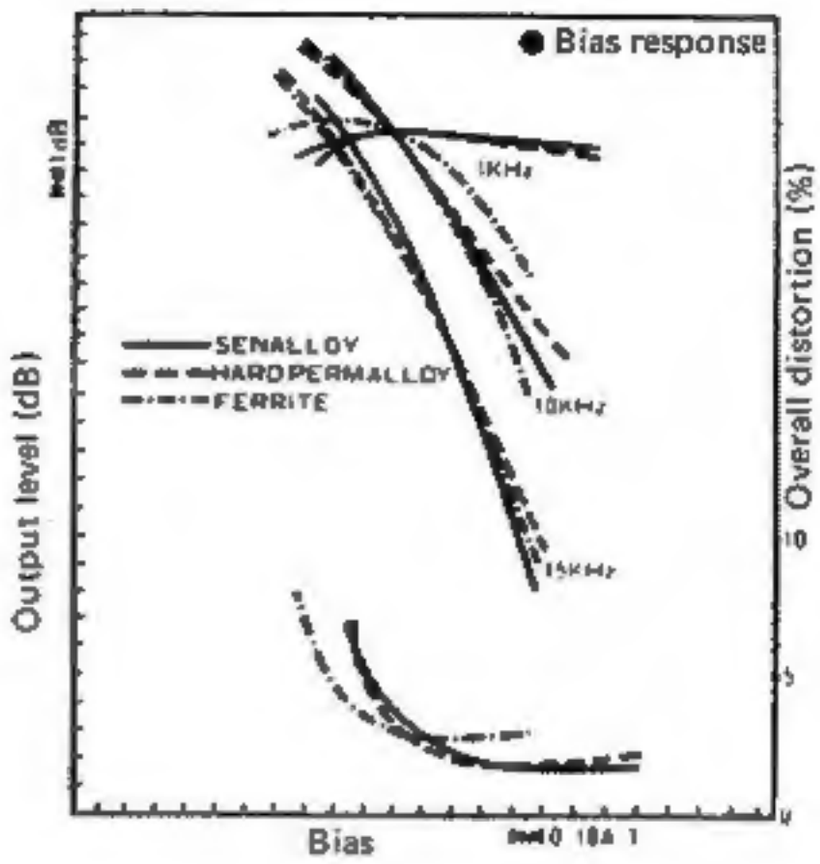



Fig. 4

3. No detectable noise
   Like the permalloy head, the SEN-ALLOY head is made entirely from metal. This eliminates Barkhausen noise, one of the principal drawbacks of ferrite heads which results from non-uniform crystallization and large magnetic domains (units of molecules to be magnetized). Tape contact noise has been reduced to the same level as with permalloy heads.
4. Characteristics stable against temperature fluctuations
   As the Curie temperature of SENDUST ALLOY — that is, the temperature at which it loses its magnetic properties — is 500°C, much higher than the 100°C or so of ferrite and relatively higher than the 450°C of permalloy, the characteristics of the SEN-ALLOY head are highly stable, even when the temperature where it is used fluctuate widely.
5. Magnetization characteristic suitable as the head material
   The higher the coercivity of the core, the more difficult is it for it to lose its magnetization once it is magnetized. This is the reason when heads become magnetized. As time passes, the head becomes more and more magnetized and this is heard as noise in playback. As the coercivity of SENDUST ALLOY used in the SEN-ALLOY head is about half of that of ferrite, its magnetization characteristic is almost the same as that of permalloy. Because of this, there is no need to demagnetize the head so often and trouble-free cassette playback is long assured.

**SEN-ALLOY head construction**

The coil is wound on a laminated permalloy core and at the end of this core, where the tape comes into contact, a chip of SENDUST ALLOY whose hardness is comparable to that of ferrite and whose magnetic properties are superior to those of permalloy is bonded at a high temperature.

**Sen-alloy head construction**

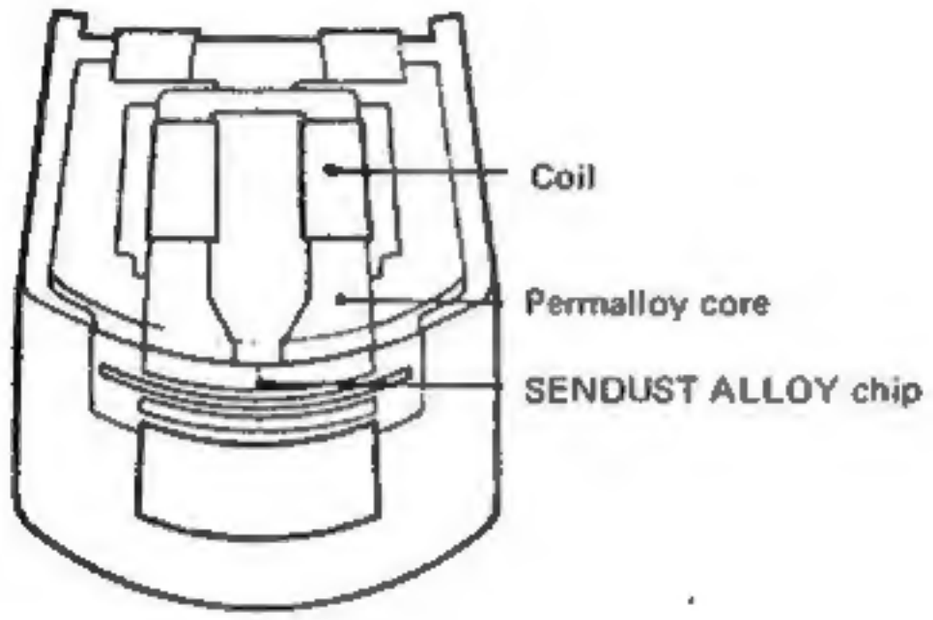


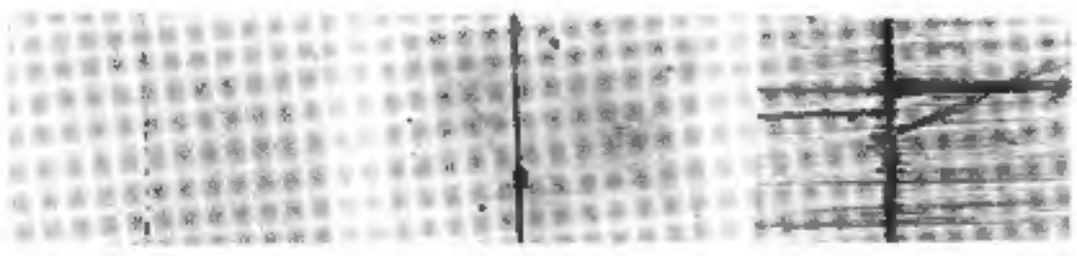

Fig. 5

**Comparison table of the characteristics of typical heads**

| | Sen-alloy | Ferrite | Permalloy |
|---|---|---|---|
| Wear resistance, partial wear resistance—Is head surface sufficiently hard? | ◎ | ◎ | △ |
| Frequency response — Can gap accuracy be guaranteed? | ◎ | ◎ | ○ |
| Distortion in recording— Is maximum flux density high? | ◎ | △ | ○ |
| Noise—Is it free from noise characteristic of core material? | ◎ | △ | ◎ |
| Magnetization—Is coercivity of core material low? | ◎ | △ | ◎ |
| Overall sound quality | ◎ | △ | ○ |

Fig. 6-1

**Photos comparing wear resistances of typical heads**



Sen-alloy head | Ferrite head (after 2000 hours of use) | Hard permalloy head

Fig. 6-2

## Coreless Motor

The Coreless Motor with its high efficiency, low inertia, high reliability and long service life was developed for use in data recorders, measuring equipment and precision machinery. It is a d.c. servomotor with superb accuracy and reliability.

**Construction of Coreless Motor**

A conventional d.c. motor consists of a solid rotor surrounded by a coil and ring-shaped magnet. The difference between the Coreless Motor and conventional motor can be seen from the following diagram. The stator is in the center and this is surrounded by the cup-shaped rotor which is a coil. The shaft runs through the center of this cup.

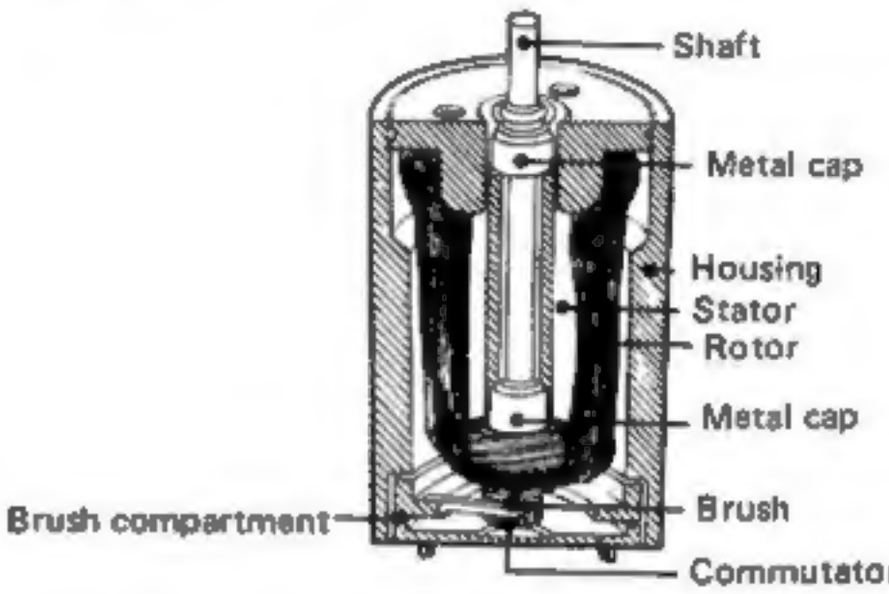



Fig. 7-1

**Features**

1. Core loss which is a drawback of the conventional motor is eliminated because of the construction, with the rotor being a coil without a core. Good starting and efficient running are possible because, by enlarging the magnetic area and increasing the number of windings, the magnetic flux density is greater than in a conventional motor.
2. The rotor is light and has a lower monent of inertia. It responds more rapidly to changes in driving torque, following control signals more precisely.
3. The inductance of the coil is low, the reactance voltage developed during rectification is low and the neutral point varies less, so that sparking between the commutator and brushes is minimized. With less sparking, noise is reduced, brushes have a longer service life and stability is improved; consequently the overall life of the motor is lengthened.
4. The motor revolves smoothly with stable speed because the commutator is divided into seven segments or individual coils while the conventional d.c. motor has three coils.

Motor characteristics — comparison curves

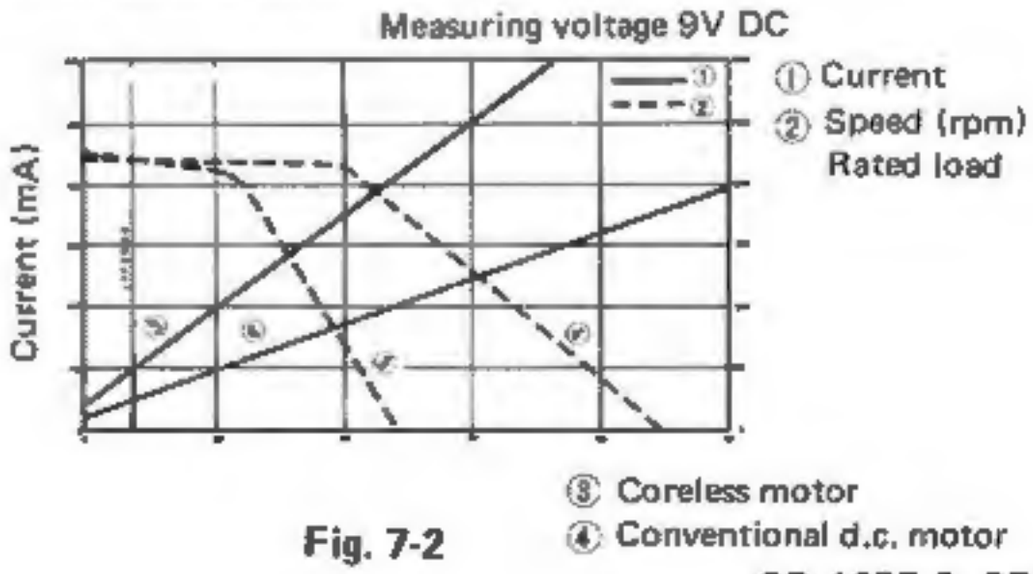



Fig. 7-2

CD-1635-2, CD-1636
No. 4145

## Super ANRS Recording and Playback

### 1. What is Super ANRS

Super ANRS is an extension of ANRS, vastly improving the linearity of cassette tape at high frequencies is addition to eliminating tape hiss.

Fig. 8 shows the relationship between signal levels in recording and playback. As you can see, when the frequency is 1kHz this relationship is linear up to almost +10dB whereas, when the frequency is 10kHz it is linear only to slightly more than −10dB. Fig. 9 shows frequency response curves for different signal levels. As the level of the signal rises, the linearity ceases at lower frequencies. In most kinds of music, however, high frequency components around 10kHz are at a lower level than low and middle frequency components, When the music is recorded at around 0VU, the high frequency components are usually recorded at −30dB or −20dB and so they are recorded without any attenuation.

However, there are passages where the insufficient linearity and dynamic range make themselves felt — music dominated by cymbals, the clapping of hands and certain vocal sounds. The highs are not reproduced as clearly and powerfully as in the original performance.

Recent improvements in cassette sound, in tapes, circuitry and heads, have raised its level almost to that of open-reel equipment. But, because of their lower tape speed, narrower track width and subsequent lower signal strength, cassette decks are still inferior to open-reel decks in linearity and S/N at high frequencies. The problem of S/N has been solved by ANRS and Dolby*, but the problem of linearity and dynamic range remained until now, with the advent of JVC's Super ANRS.

Linearity response of cassette tape (NORMAL TAPE)

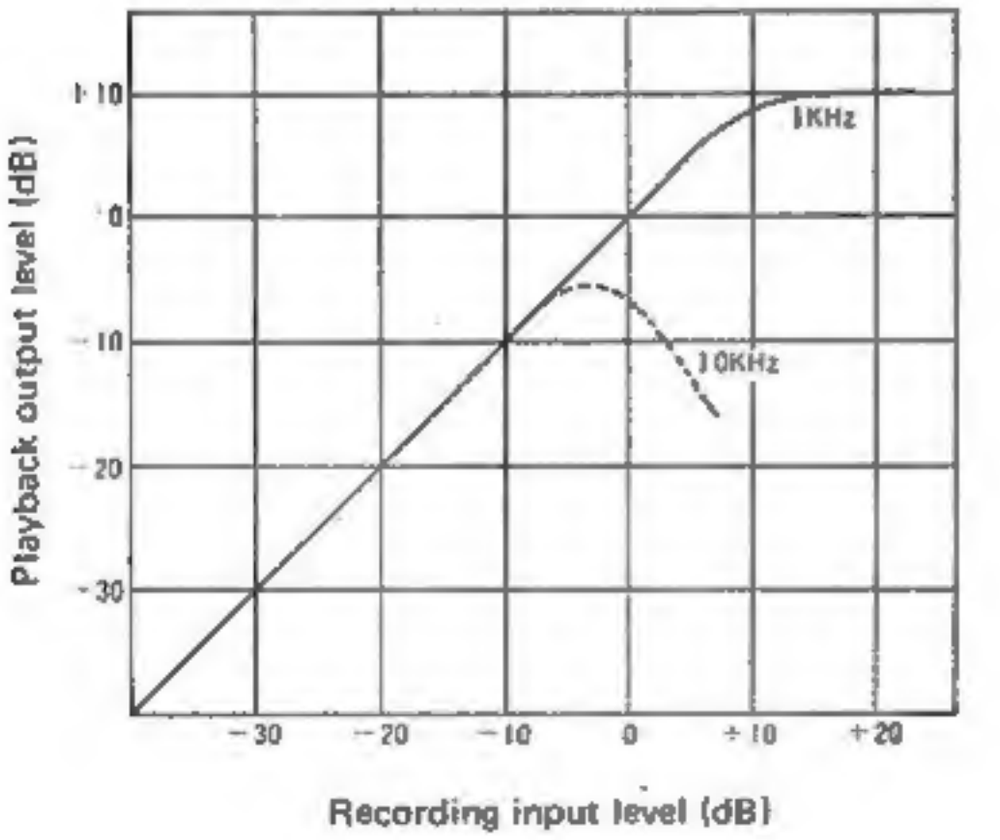



Fig. 8

REC/PB frequency response of normal tape

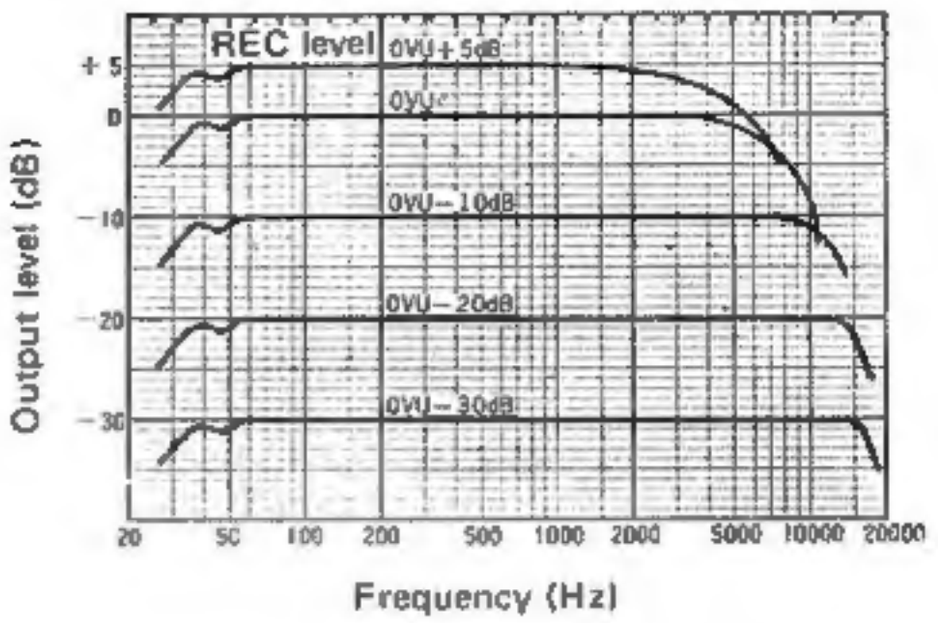



Fig. 9

### 2. Principles of Super ANRS

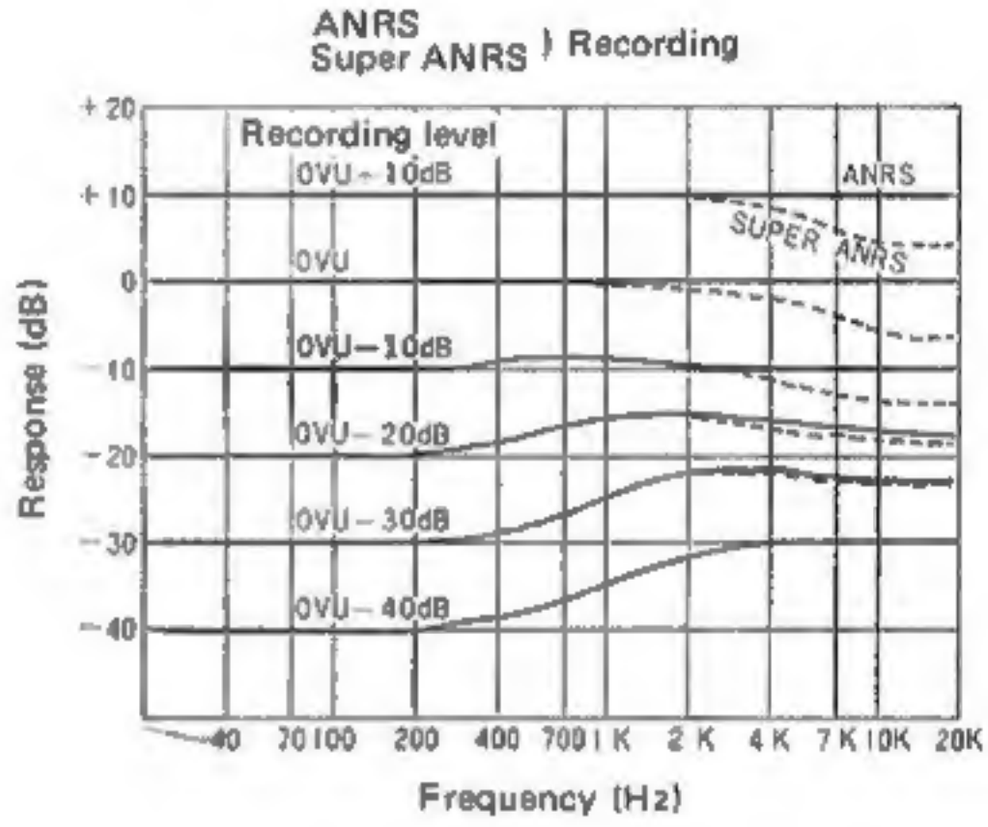



Fig. 10

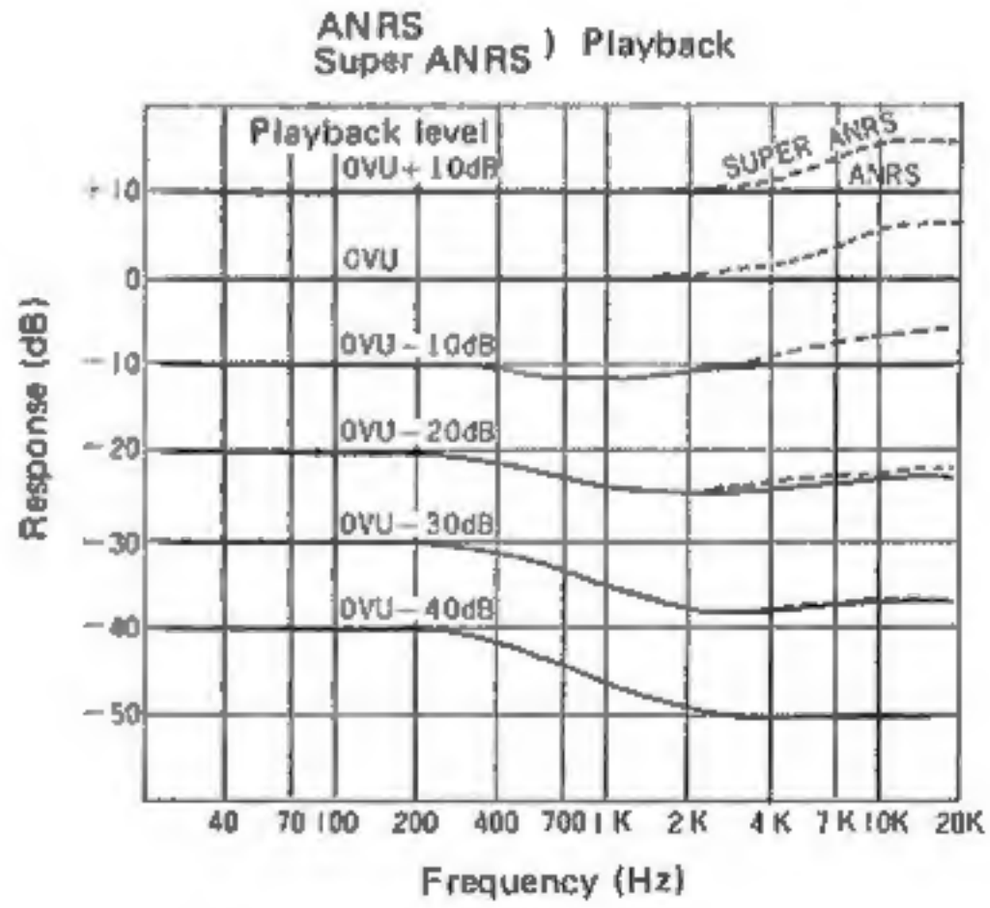



Fig. 11

* Dolby is a trademark of Dolby Laboratories Inc.

Input/output of Super ANRS

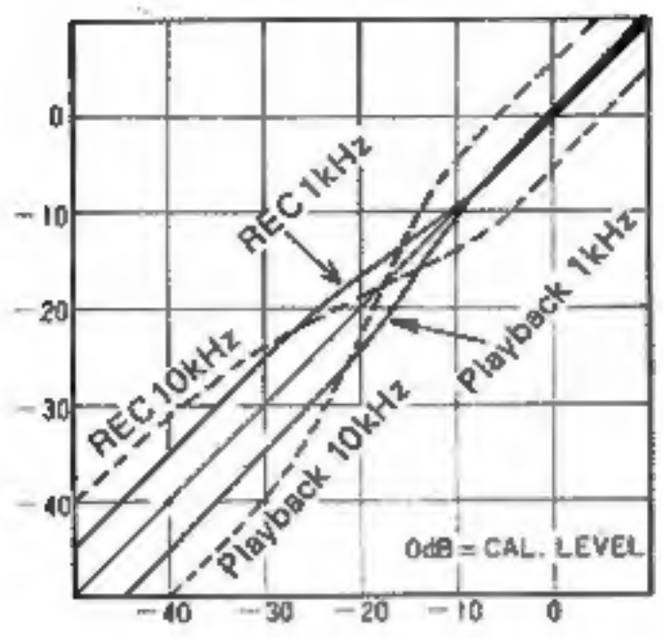



Fig. 12

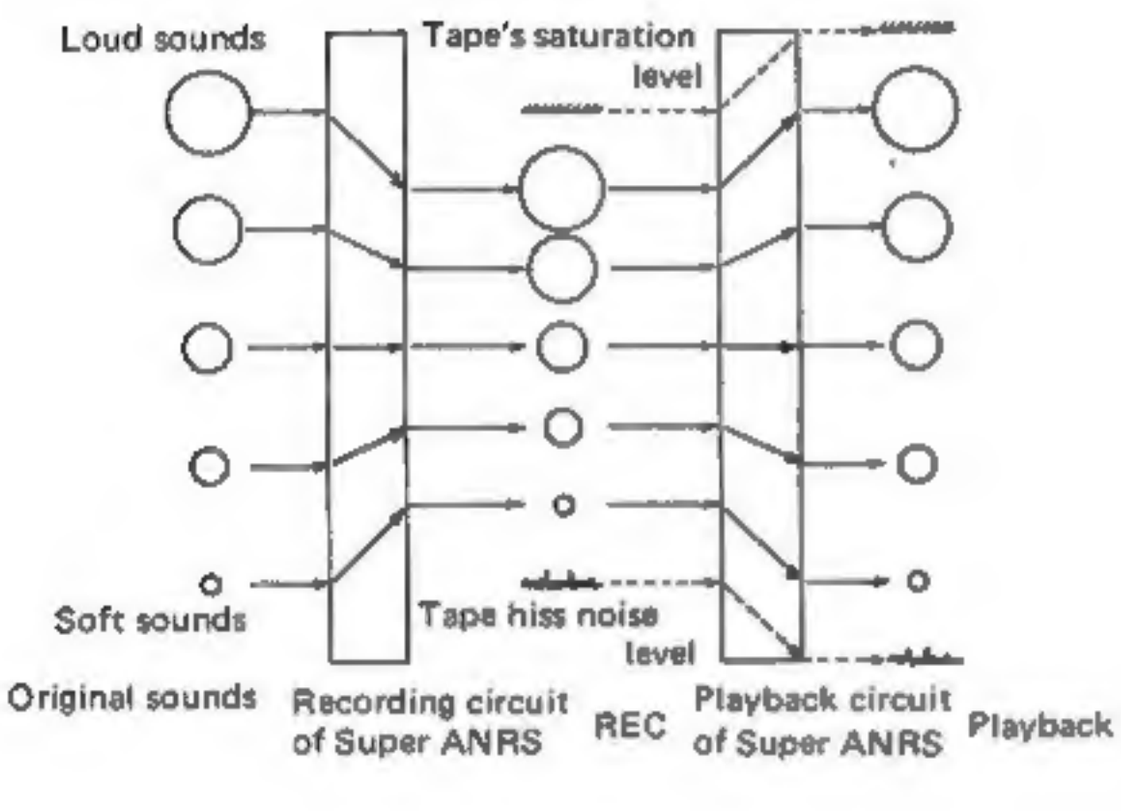



Fig. 13

In Figs. 10, and 11, the solid curves are for ANRS and the dotted curves are for Super ANRS.
As you can see from Fig. 10, ANRS records high frequency signals at the same level as that at which they are input when the level is high and boosts the level when the signals are weak. When Super ANRS is added to this, Super ANRS reduces the level of high frequency signals at high levels. The characteristics in playback, as seen in Fig. 11, are completely complementary so that the original sound is faithfully reproduced.
Fig. 12 shows the input/output characteristics of Super ANRS. It works in the same way as ANRS for low level sounds, eliminating tape hiss; for high level signals, it works as a dynamic range expander.
Fig. 13 is an illustration of this principle. The sizes of the circles indicate the level of the sound; big circles for loud sounds, small circles for soft sounds. Super ANRS reduces higher level sounds and boosts lower level sounds in recording. These processed sounds are recorded on tape. In this way, loud sounds which would have exceeded the tape's saturation level and soft sounds which would have been obscured by tape hiss can be recorded. In playback, Super ANRS returns all recorded signals to their original levels; tape hiss is reduced to an inaudible level and the effective saturation level of the tape is raised, allowing a wider dynamic range.

## 3. Effects of Super ANRS

1) Noise Reduction
High frequency tape hiss noise is eliminated without affecting the original music signal, as with ANRS, improving the S/N ratio by 5dB at 1kHz and 10dB at 5kHz and more.
2) Improvement of linearity a high frequencies
Linearity at high frequencies is improved by 6dB at 10kHz for 0VU recording and 12dB at 10kHz for +5VU recording (Normal tape) as shown in Fig. 15.

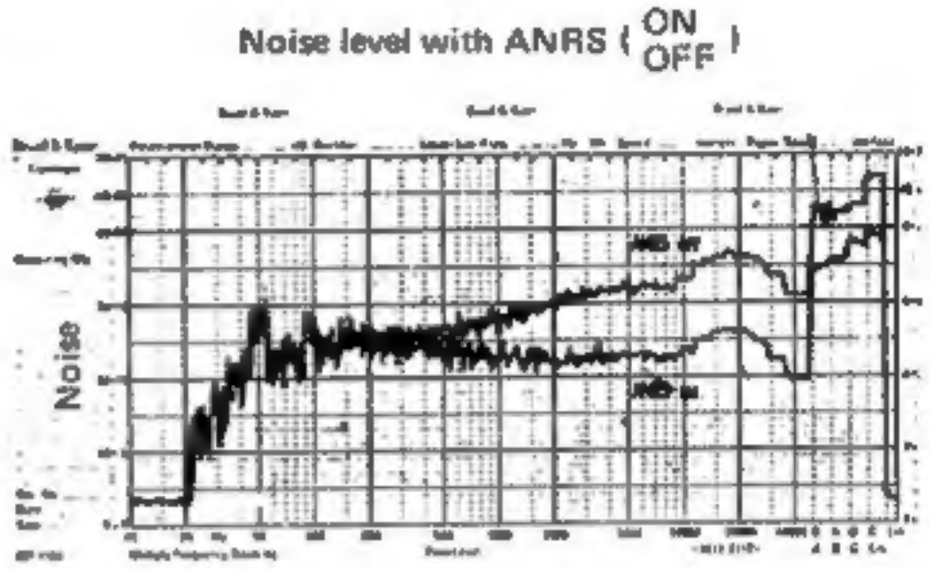



Fig. 14

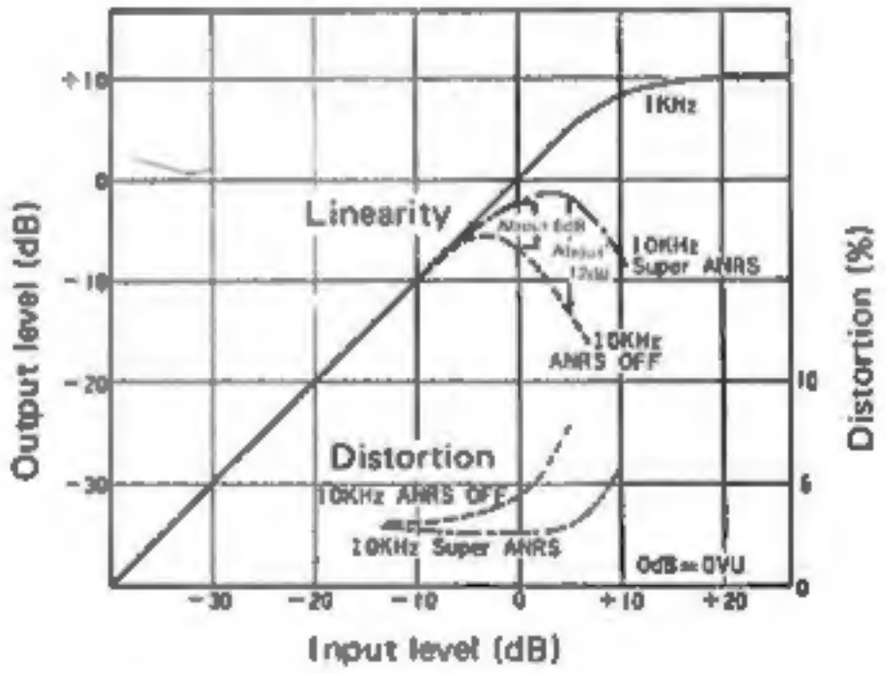



Fig. 15

These can be seen from the frequency response characteristics shown in Fig. 16-1 and 16-2.

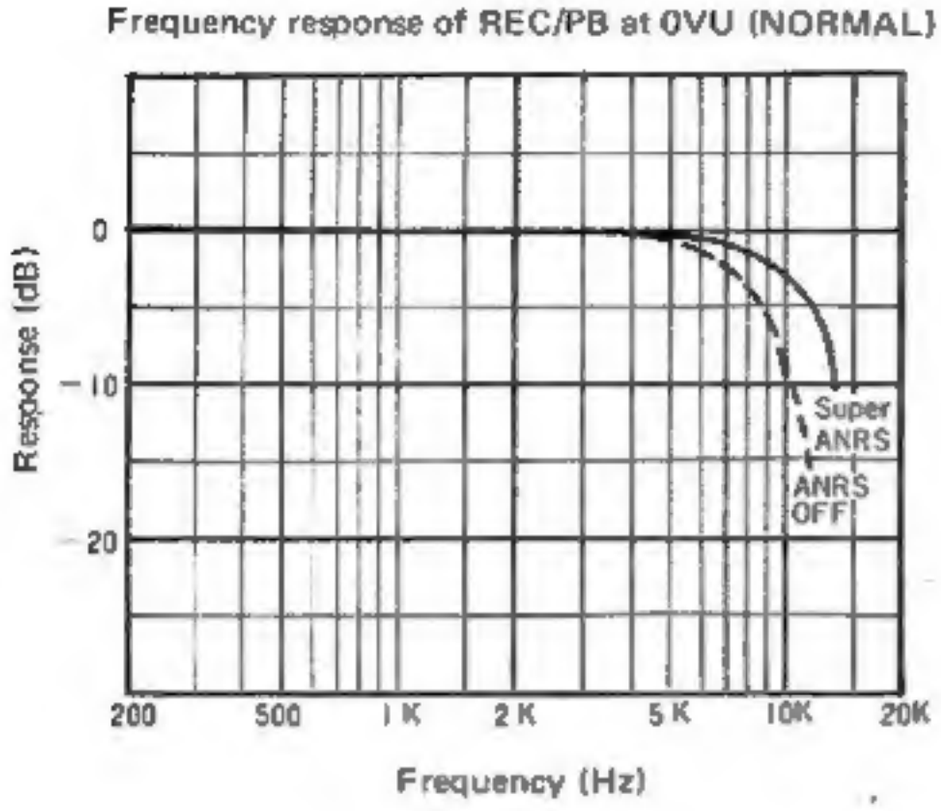



Fig. 16-1

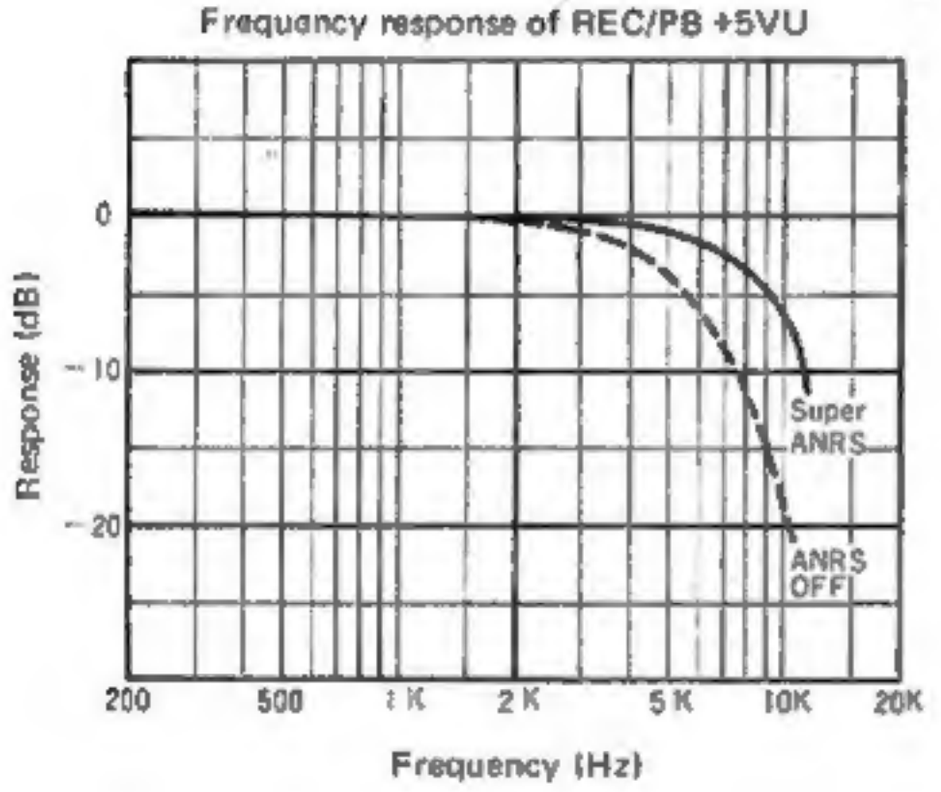



Fig. 16-2

**4. Circuit Description**

Basically, the Super ANRS circuit consists of the variable impedance circuit of ANRS and an additional high-cut filter element formed by R341, R518 and C510.

When the input signal level is low (when R and C take increased values), the circuit characteristics are exactly the same as for ANRS. As the input level rises (with decreasing R and C values), the high-cut filter circuit begins to operate, giving the characteristics shown in Fig. 17.

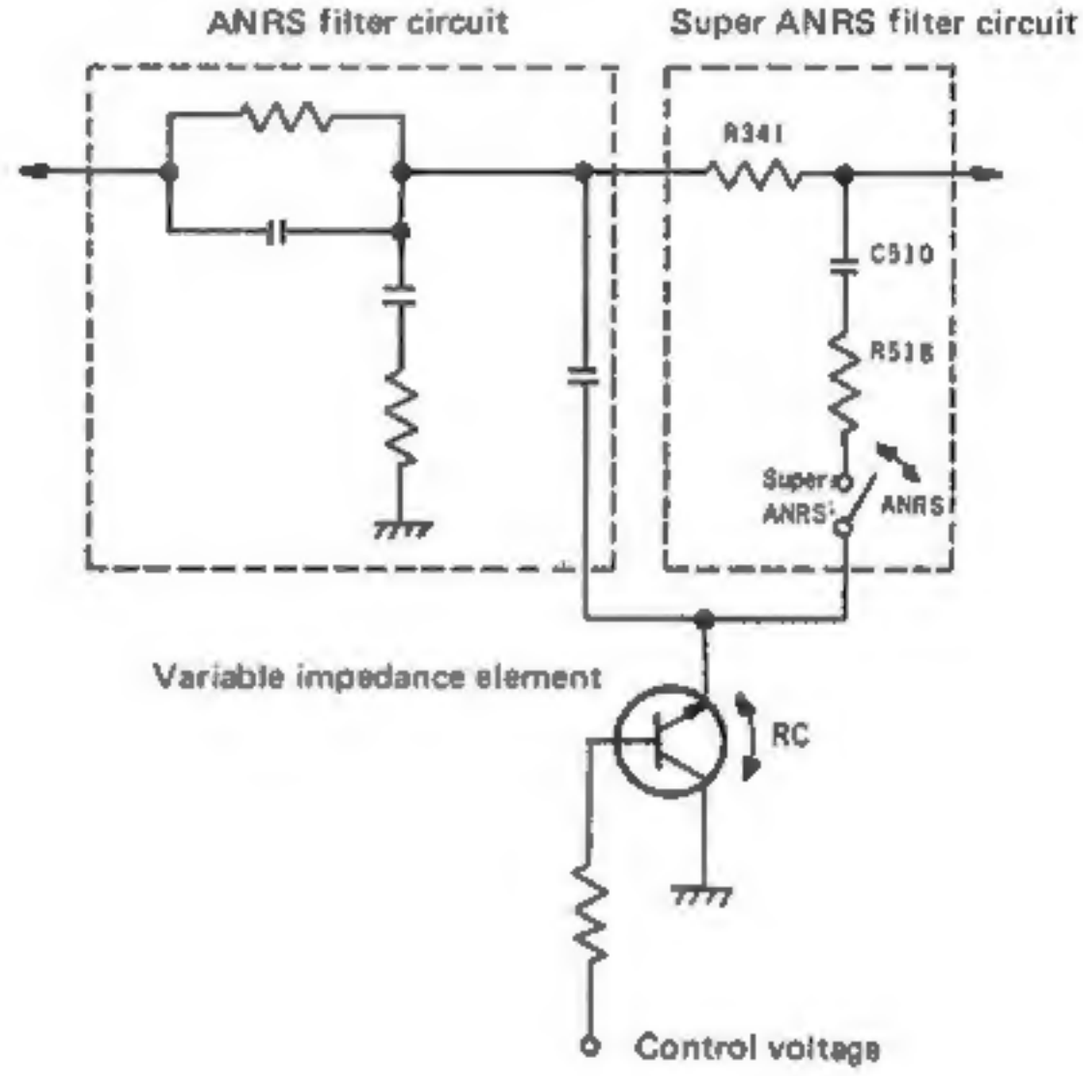



Fig. 17

# Main Parts Removing & Replacement

This cassette deck which features a compact design and performance uses miniature-sized parts which are closely arranged. Use special care when servicing it.

## Enclosure Assembly

| Parts Name | Procedure | Ref. No. | Remarks |
|---|---|---|---|
| Bottom cover | 1. Remove the battery case, and then can be removed battery. (6 cells)<br>2. Remove 6 screws fastening the bottom cover.<br>3. Pull out 2 wire tips for the battery. | [18] ① | In battery case is fixed 1 screw (3φ8mm)<br>Orange, black wires |
| Control knobs | Pull out to front or upper side. | | PB level control knob<br>Tone control knob<br>REC level control knobs (left and right)<br>REC volume control knob |
| Top panel | 1. Press [EJECT] button, and the cassette cover will swing open, then remove 1 screw.<br>2. Remove 3 screws fastening the top panel.<br>3. Remove 4 tapping screws fastening the top panel.<br>4. Pull out 2 wire tips to speaker, then can be removed the top panel. | [19] ②<br>[21] ③<br>[21] ④ | Black screw 2φ 4mm<br>Black screws 3φ 6mm (front side of top panel)<br>Black screws 3φ 3mm (front side of top panel) |
| Front panel | 1. Remove 5 tapping screws.<br>2. Remove 2 screws (left side).<br>3. Pull out the front panel to front side. | [22,25,26] ⑤<br>[24] ⑤ | Upper(1 pc.), under(1 pc.) and right(3 pcs.) sides, 3φ 6mm |

## Electric Parts

| Parts Name | Procedure | Ref. No. | Remarks |
|---|---|---|---|
| Main amp circuit board | 1. Remove 4 screws fastening main amp circuit board.<br>2. Remove 2 screws fixing the bracket (heat sink plate) of transistors, and then remove shield board. | [21] ⑥<br>[24] ⑦ | Violet screws |
| ANRS circuit board | Remove 4 screws fastening ANRS circuit board, and then remove shield board. | [21] ⑧ | Violet screws |
| Switch circuit board | 1. Remove 2 screws fastening SW circuit board.<br>2. Pull out 4 blind felts of switch shaft.<br>3. Remove 4 screws fastening the switches.<br>4. Remove 2 nuts and washers fastening variable resistors.<br>5. Pull out switch circuit board to back side. | [23] ⑨<br>[23] ⑩<br>[23] ⑪ | PB level control VR, Tone control VR |
| Power transformer | Remove 2 screws and washers (as same nuts) fastening power transformer. | [20] ⑫ | |

## Mechanical Parts

| Parts Name | Procedure | Ref. No. | Remarks |
|---|---|---|---|
| Mecha ass'y | 1. Remove ANRS circuit board.<br>2. Remove muting bracket.<br>3. Remove 3 screws fastening circuit board. (upper and under side of mecha ass'y) | [27] ⑬<br>[27] ⑭ | |
| Motor ass'y | 1. Disconnect 2 wires to motor circuit board.<br>2. Remove capstan belt.<br>3. Remove 2 screws fastening bracket of motor circuit board.<br>4. Remove 3 screws (as same washers and rubber bushings) fastening motor. | [27] ⑮<br>[28] ⑯ | Red, black wires<br>Don't soil belt |
| Pinch roller arm ass'y | 1. Remove E ring pinch roller arm ass'y.<br>2. Remove pinch roller arm spring. (for pressure adjustment) | [27] ⑰ | |
| Take-up reel (right side) | 1. Remove E ring holding take-up reel.<br>2. Remove take-up reel from shaft. | [27] ⑱ | |
| Supply reel (left side) | 1. Remove E ring holding supply reel.<br>2. Remove supply reel from shaft. | [27] ⑲ | |
| Flywheel | 1. Remove capstan belt.<br>2. Remove 2 screws fixing flywheel holder.<br>3. Remove E ring holding take-up idler arm.<br>4. Pull out flywheel. | [28] ⑳<br>[28] ㉑ | Don't soil belt. |

[Note] Almost all the mechanical parts can be adjusted and replaced when only the ANRS circuit board is removed.


Fig. 18

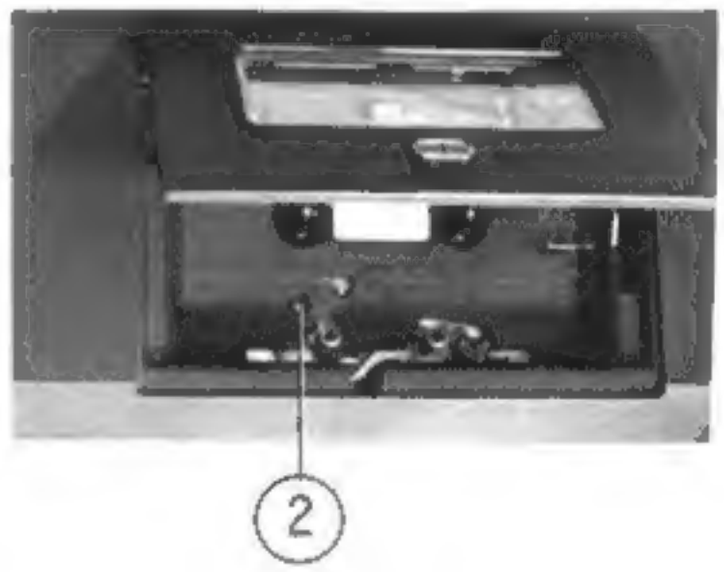



Fig. 19

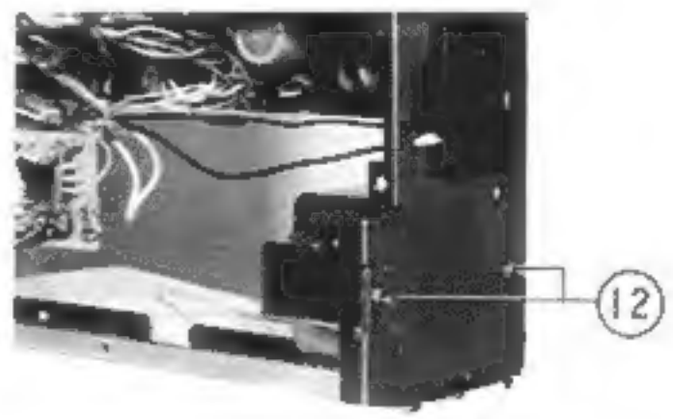



Fig. 20

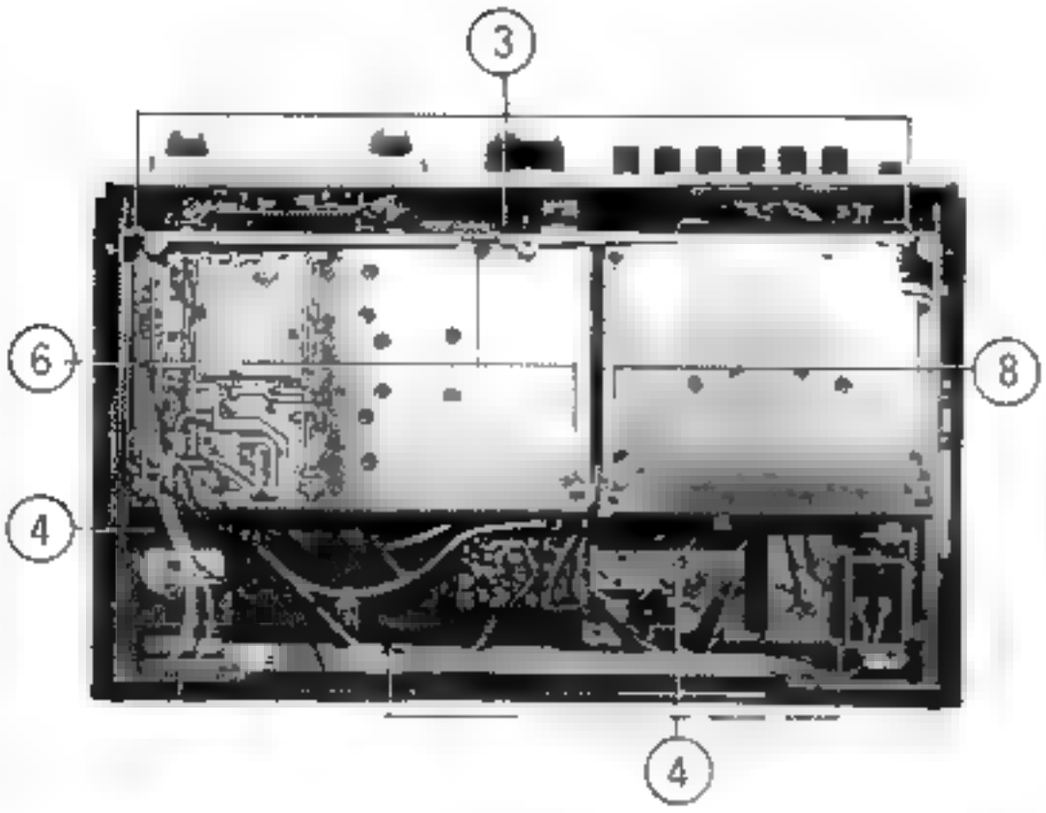



Fig. 21

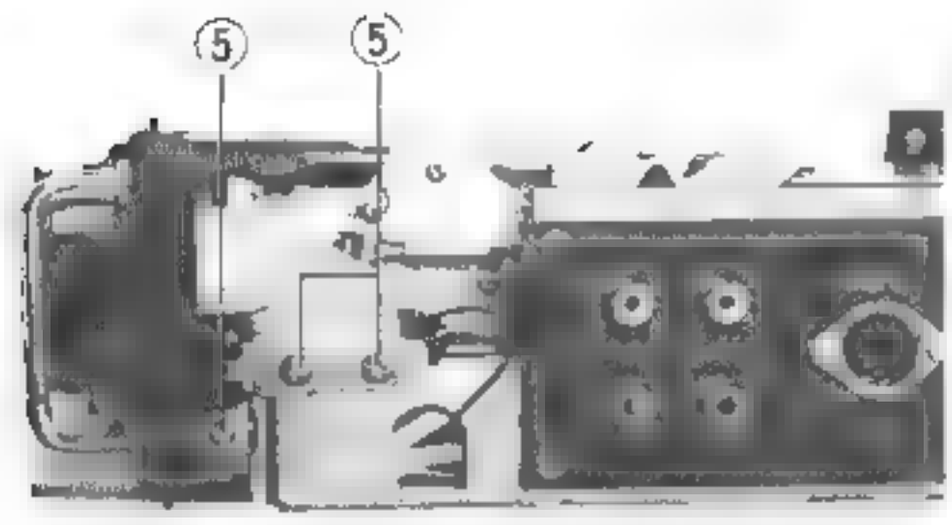



Fig. 22

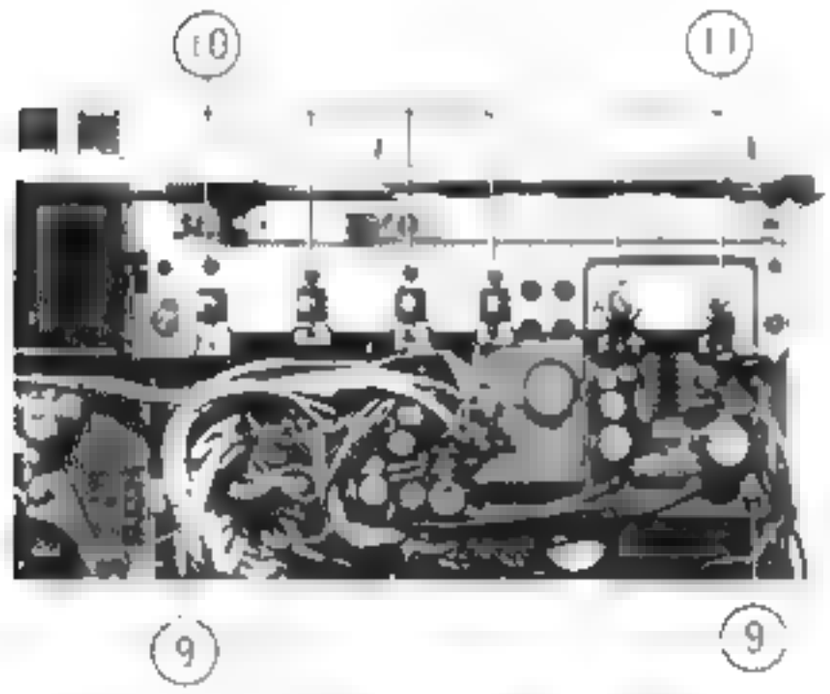



Fig 23

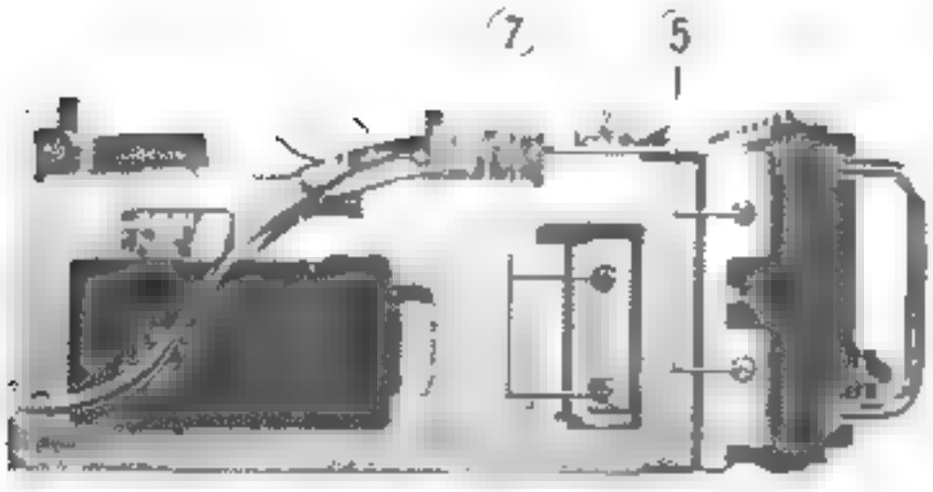



Fig 24

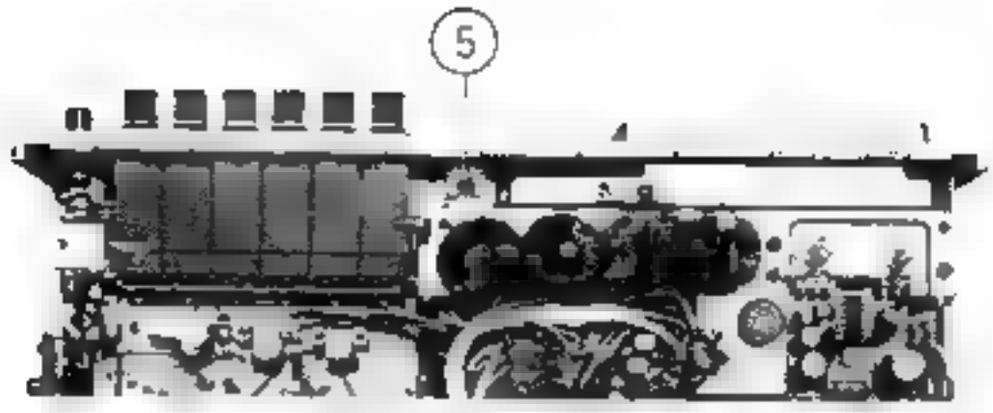



Fig. 25

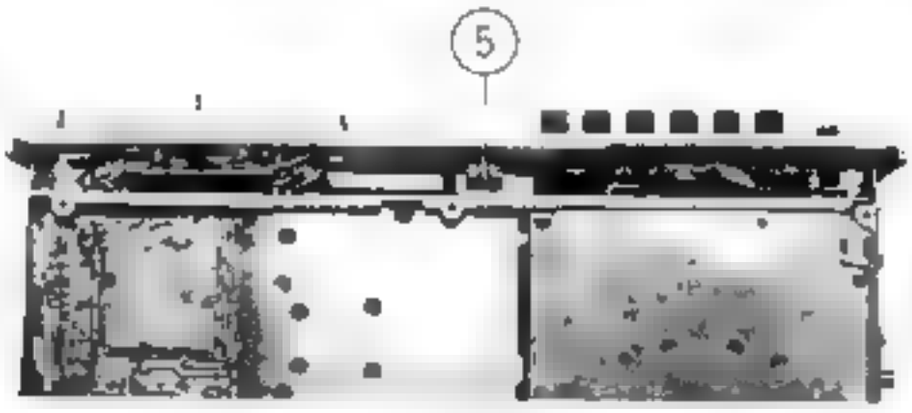



Fig. 26

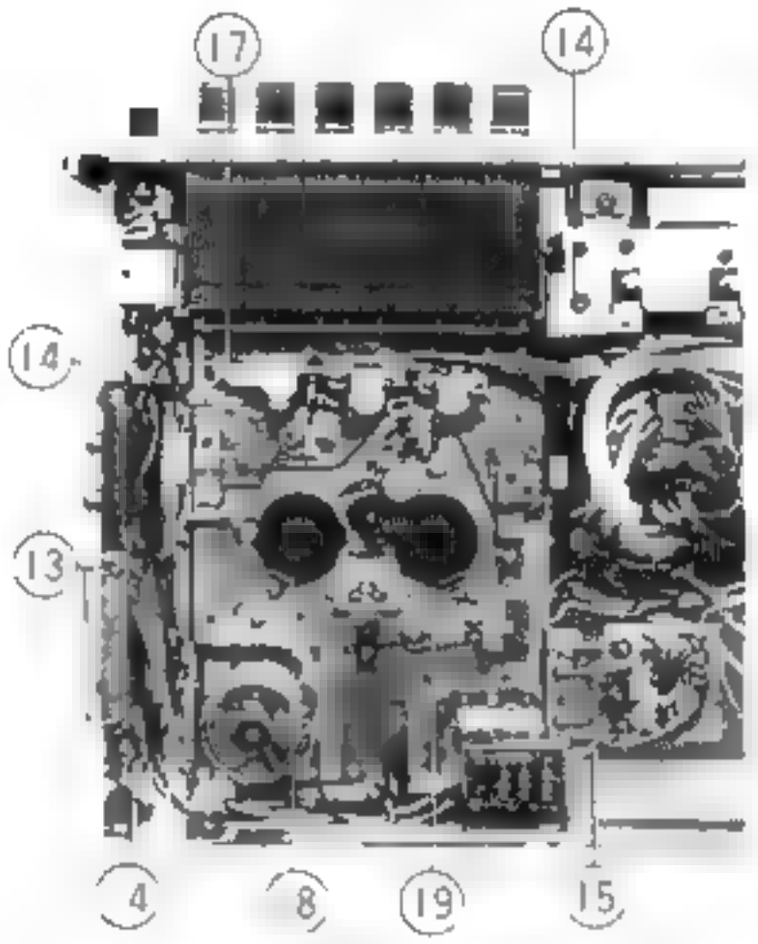



Fig. 27

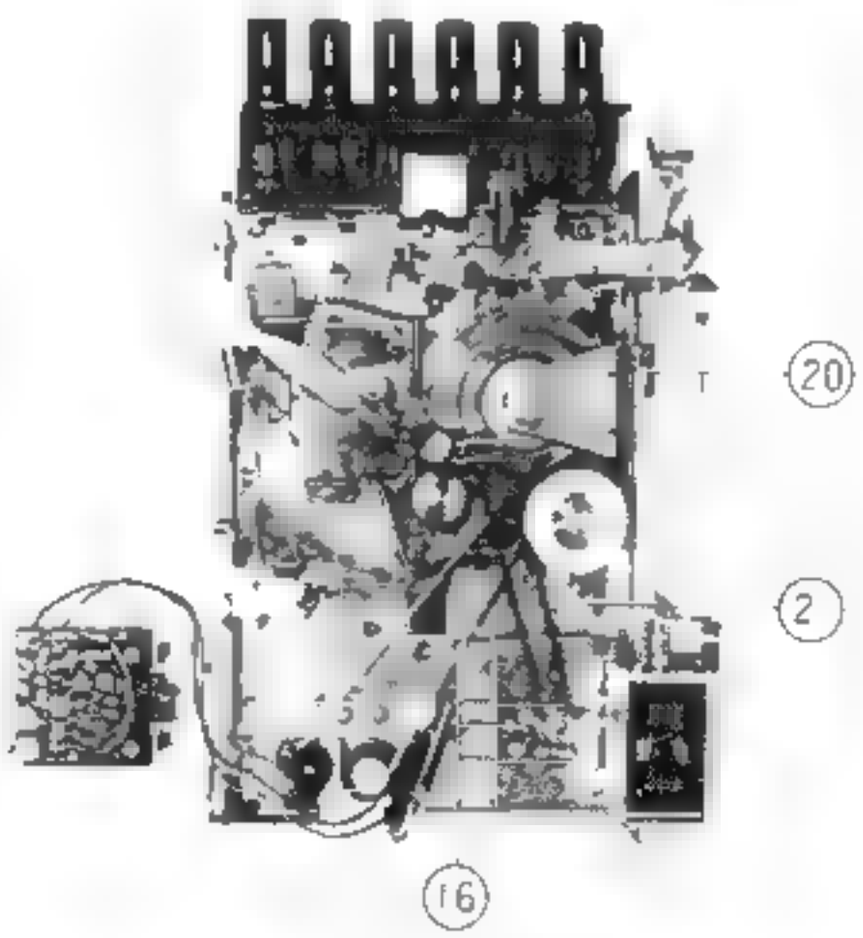


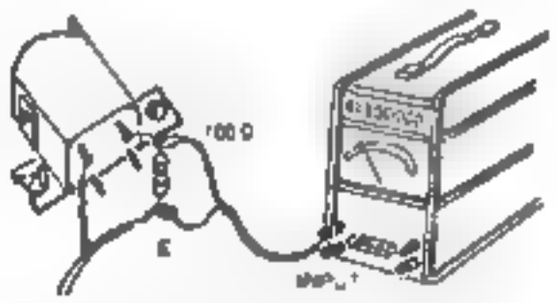
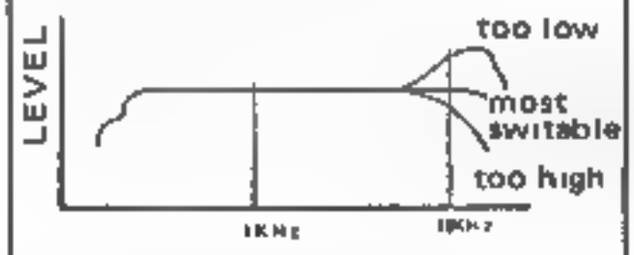

Fig. 28

# Main Adjustments

## Electrical Adjustments

Equipment and measuring instruments used for adjustment.

1. Audio-frequency oscillator
2. Attenuator
3. V.T.V.M (measuring AC in milivolts)
4. Test tapes (VTT-664 1kHz 16mM)
5. Blank tapes (QP-12 C521V standard tape), TP-18 CrO2 C401R (CrO2 tape) or equivalent.
6. Resistors 100Ω (for measurement of the bias current) 600Ω (for attenuator matching)

| No. | Item | Procedure | Part | Rating | Remarks |
|---|---|---|---|---|---|
| 1. | Level meter deflection | 1. Set the deck in the record mode.<br>2. Input 1kHz signals from MIC or LINE IN jacks (with a level of –60dB approx. for MIC input or –10dBs approx. for LINE IN input.)<br>Adjust the recording volume controls so that the voltage across LINE OUT is –8dBs.<br>3. Adjust two semi-fixed variable resistors R134(L-ch) R234(R-ch) so that the level meters indicate zero VU. | R134 | VU meter reading 0 | The angle of meter deflection has been factory-adjusted, but should be adjusted when parts are replaced. |
| 2. | Reproduction level | Adjust R115 and R215 to obtain zero VU meter reading using reference tape VTT-664 1kHz 16mM (old ref. no. TMT-6009). Set equalizer switch in "NORMAL" position and turn off ANRS switch when adjusting reproduction level. | R115<br>R215 | VU meter reading· 0 | 1. Adjust reproduction level when heads are replaced.<br>2. Make this adjustment after making sure level meter deflection angle is correct. |
| 3. | Recording bias | 1. Set the deck in the record<br>2. Connect a 100Ω resistor into the ground side (at recording mode) wiring of the head.<br>3. Connect the AC V.T.V.M across the resistor, and measure its voltage.<br>R/P HEAD (V.T.V.M)<br>  <br>Fig. 29<br>If no measuring apparatus is available, check in the following way<br>Music sound is not sonorous in the high range on playback: bias current is too high.<br>Music sound is also sonorous in the high range on playback but distorted bias current is too low. | Standard tape.<br>R555,557<br><br>CrO2 tape:<br>R556,558<br>(BIAS ADJ) | Approx. 37mV<br><br>Approx. 47mV | 1. Adjust recording bias current when heads are replaced.<br>2. Use a measuring apparatus of excellent frequency characteristic.<br>3. Be sure to connect resistor to head terminal. It is recommended to check the following after adjustment. (ANRS → OFF)<br>(Set EQ and BIAS switches according to type of tape used.)<br><br>Obtain zero VU meter reading at 1kHz, attenuate signal by 20dB, record and play at 1 and 10kHz.<br>Then adjust bias current so that measuring apparatus shows the same output at 1 and 10kHz.<br>  <br>Fig. 30<br>Attend the bias current to change with distortion affection. |

| No. | Item | Procedure | Part | Rating | Remarks |
|---|---|---|---|---|---|
| 4 | Recording level | A: Adjustment for normal tape (Use JVC reference tape.)<br>1. Set the deck in the record mode.<br>2. Input 1kHz signals from MIC or AUX IN jacks and make recording in such a way that the level meters indicate zero VU.<br>3. Adjust R142 and R242 till reproduction level is reduced to zero when the reference tape is played.<br>B: Adjustment for CrO2 tape (Use JVC reference tape.)<br>1. Set the deck in the record mode.<br>2. Input 1kHz signals from MIC or AUX IN jacks and make recording in such a way that the level meters indicate zero VU.<br>3. Adjust R138, and R238 till reproduction level is reduced to zero when the reference tape is played. | R142,242 (REC LEVEL NOR)<br><br>R138,238 (REC LEVEL CHROM) | | 1. This adjustment is necessary when heads are replaced.<br>2. Make this adjustment after adjusting level meter deflection angle, reproduction level and recording bias current.<br>3. Set EQ and BIAS switches according to type of tape used.<br>4. Turn off ANRS switch. |
| 5 | ANRS circuit | 1. Disconnect power connection receptable of bias oscillator so that oscillator does not operate.<br>2. Set the deck in the record mode<br>3. Input 1kHz –10dBs signals from LINE IN jacks adjust the recording volume controls so that the voltage across LINE OUT is –5dBs.<br>4. Turn R335 and R435 (CONT GAIN) and R340 and R440 (DC BIAS) in the direction opposite to the marking<br>5. Adjust R324 and R424 so that level does not change when ANRS is turned on and off, and turn on ANRS.<br>6. Input 1kHz, –50dBs signals from LINE IN.<br>Adjust R340 and R440 so that voltage across LINE OUT is –39.5dBs.<br>7. Input 5kHz –30dBs signals from LINE IN<br>Adjust R335 and R435 so that voltage across LINE OUT is –21 5dBs.<br>8. Repeat steps (5) through (7).<br>9. Turn ANRS swtich in "Super" position when input 10kHz –10dBs signals from LINE IN<br>Check output levels are –11dBs ±2dB.<br>10. Connect receptable of bias oscilfator disconnected in step (1).<br>11. Play reference tape VTT-664 and adjust R302 and R402 so that level does not change when ANRS is turned on and off. | R324,424 (REC GAIN)<br><br>R340,440 (DC BIAS)<br><br>R335,435 (CONT GAIN)<br><br>R302,402 (PB GAIN) | | |
| 6. | Battery | 1. Apply exactly 6V to battery contacts and switch machine to play or fast forward.<br>2. Turn down battery check switch in "CHECK" position and adjust so that meter pointer deflects to the other end of green area. | | | Do not mistake one polarity for the other.<br>  <br><br>Fig. 31 |

# Block Diagram

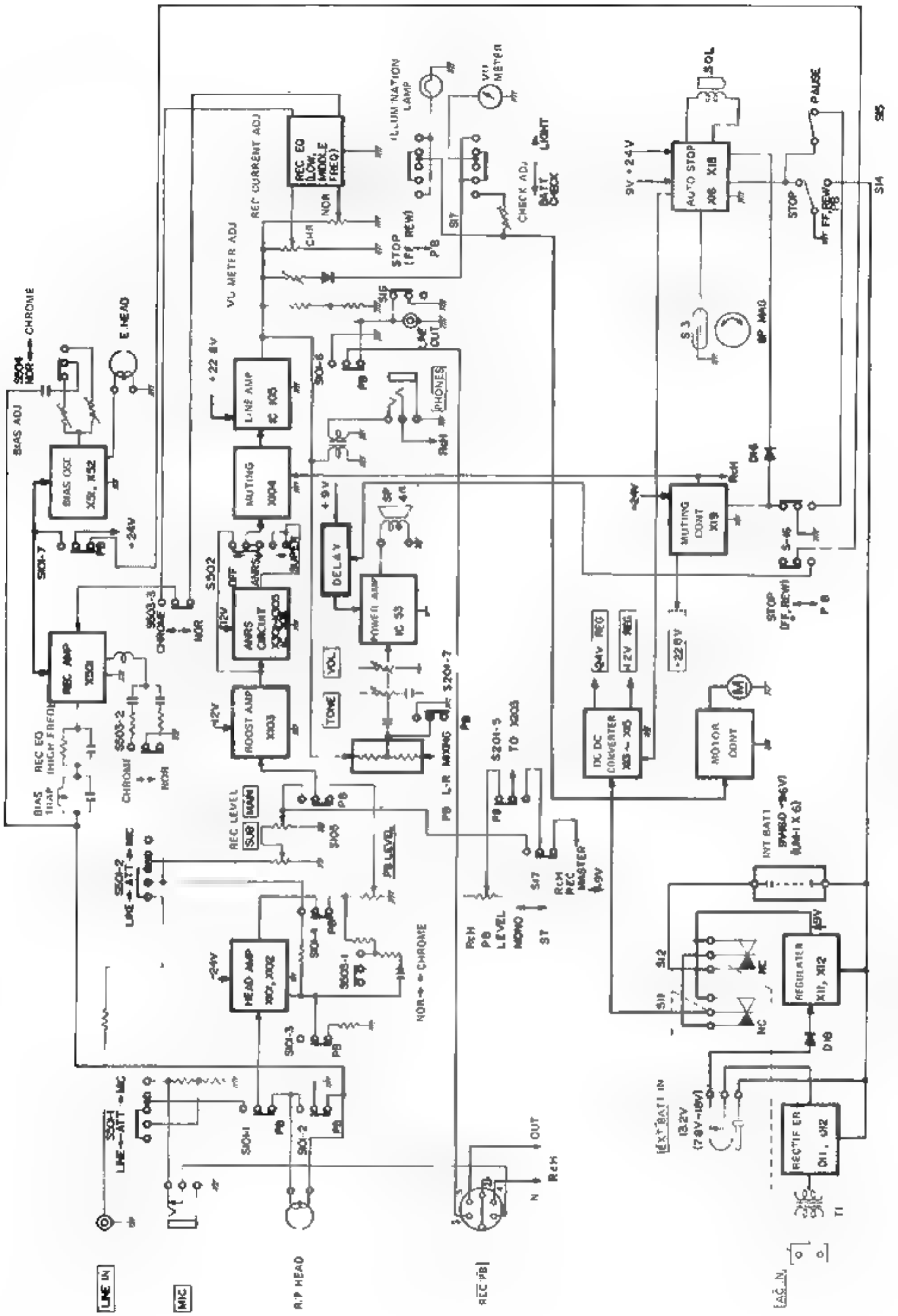



Fig. 32

## Variable Resistor

| | | |
|---|---|---|
| R115,215 | P B Level Adj. | 50kΩ |
| R134,234 | Meter Adj. | 1kΩ |
| R138,238 | REC Level Adj. (chrome) | 20kΩ |
| R142,242 | " (normal) | 20kΩ |
| R302,402 | ANRS P.B Gain Adj. | 10kΩ |
| R324,424 | ANRS REC Gain Adj. | 10kΩ |
| R335,435 | ANRS Control Gain Adj. | 20kΩ |
| R340,440 | ANRS DC Bias Adj. | 100kΩ |
| R556,558 | Bias Current Adj. (chrome) | 100kΩ |
| R555,557 | " (normal) | 200kΩ |

## Switch

| | |
|---|---|
| S101-1~7 (201) | REC-PB SW at "PB" mode |
| S301-1~4 (401) | |
| S501-1~2 (601) | INPUT SW at "LINE" mode |
| S502 (602) | ANRS SW at "OFF" |
| S503-1~3 (603) | EQ SW at "NORMAL" |
| S504 (604) | BIAS SW at "NORMAL" |
| S17-1~2 | CHECK SW at "OFF" |
| S11 | EXT. BATT JACK |
| S12 | AC JACK |
| S13 | REED SW |
| S14 | POWER SW at "OFF" |
| S15 | PAUSE SW at "OFF" |
| S16 | MUTING SW |
| S17 | REC MODE select SW at "Stereo" mode |

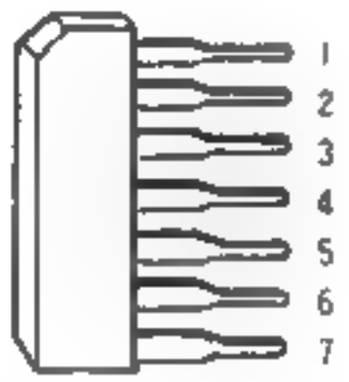
## Diode

| | |
|---|---|
| D101,201 | 1S188AM |
| D102,202 | 1S188AM |
| X103,203 | MA-150 |
| D301,401 | 1S188FM |
| D392,402 | 1S188EM |
| D31 | MA26W |
| D11-1,-2 ] D12-1,-2 ] | T30154-001 or V06B |
| XD13 | RD10E(1) |
| D14 | MA150 |
| D15 | 1S188AM |
| D16 | MA150 |
| D17,18 | T30155-001 or V06B |
| D19 | MA26W |
| ZD20 | RD-22E(1) |
| D21 | MA162 |
| D22 | MA161 |
| D23 | MA150 |
| D24,25 | MA150 |
| D26 | MA450 |
| [SCR] | 2SF656 |

## Transistor & IC

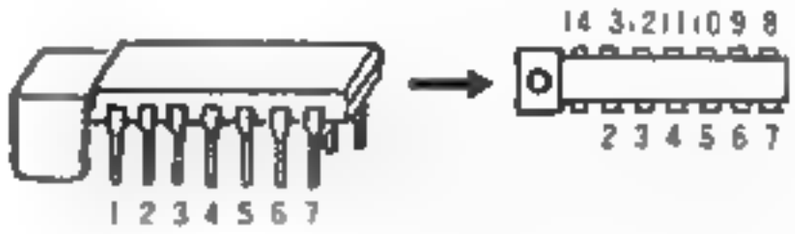
| | |
|---|---|
| X101,201 | 2SA721(TU) |
| X102,202 | 2SC1327(TU) |
| X103,203 | 2SC1327(TU) |
| X104,204 | 2SC828(RS) |
| IC105,205 | TA7066P(B) |
| X301,401 | 2SC1327(TU) |
| X302,402 | 2SC933FP |
| X303,403 | 2SA721(TU) |
| X304,404 | 2SC1327(TU) |
| X305,405 | 2SC828(R) |
| IC306,406 | TA7066P(BC) |
| X501,601 | 2SC828A(R) |
| X51,52 | 2SC828A(RS) |
| IC53 | LA4102 |
| X11 | 2SC828(RS) |
| X12 | 2SD313(DE) |
| X13 | 2SC828(R) |
| X14 | 2SC1384(R) |
| X15 | 2SC1354(R) |
| X16 | 2SC828(RS) |
| X17 | 2SC828A(RS) |
| X18 | 2SA564A(RS) |
| X19 | 2SA564A(RS) |
| X20 | 2SC1383(RS) |
| X21 | 2SC828(RS) |


2SD313




TA7066P

LA4102





2SA721
2SC1327
2SC828
2SC828A
2SA564A
2SC933FP

Fig. 33

# Circuit Board Parts

## Main Amp Circuit Board

Red print is shown the voltage (V) of playback mode.
(  ) voltage; at recording mode.
When you measure the voltage by tester, we recommend you to use 20kΩ/V or more impedance tester.

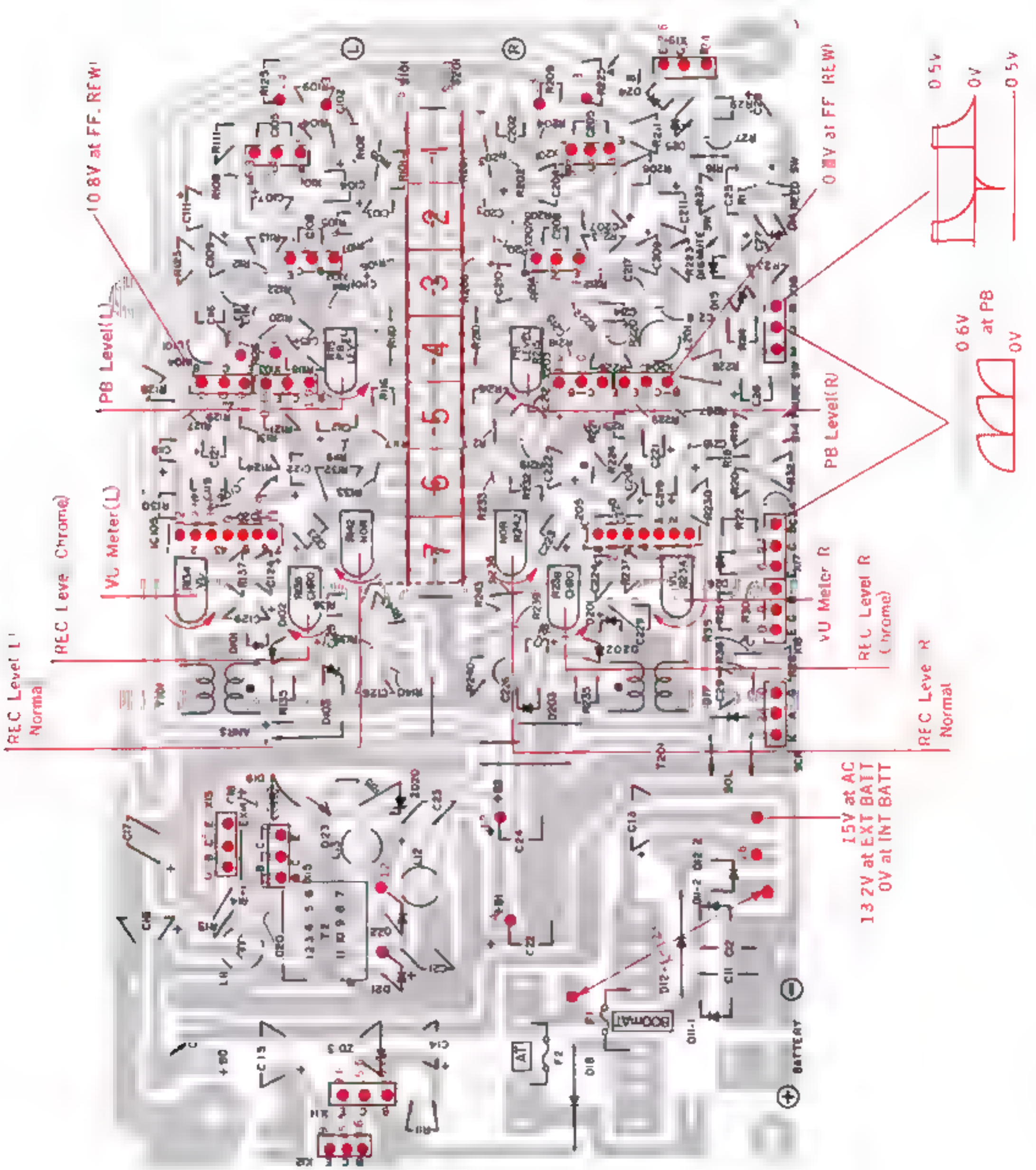



Fig. 34

## Main Amp Circuit Board Parts List

| Ref. No. | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|
| | *TAA304201-02 | Circuit Board | | | 1 |
| | QMG1321-001 | Fuse Holder | | | 2 |
| | *QMF51A2-R80 | Fuse | 0.8A | | 1 |
| | 〃 -1R0 | 〃 | 〃 | | 1 |
| | TAZ000445-06 | Fuse Seal | 800mAT | | 1 |
| | 〃 -01 | 〃 | 1.0AT | | 1 |
| | LPSP2608Z | Screw | for fuse holder | | 2 |
| (REC/PB AMP) | | | | | |
| S101,201 | T31519-001 | Slide Switch | | | 1 |
| R102,202 | QRZ0019-104 | C. Resistor (Low noise) | 100kΩ | ¼W | 2 |
| R103,203 | 〃 -823 | 〃 ( 〃 ) | 82kΩ | 〃 | 2 |
| R105,205,136,236 | QRD143K-563 | C. Resistor | 56kΩ | 〃 | 4 |
| R109,209,114,214 | 〃 -104 | 〃 | 100kΩ | 〃 | 4 |
| R119,219 | 〃 -823 | 〃 | 82kΩ | 〃 | 2 |
| R104,204,108,208 | 〃 -274 | 〃 | 270kΩ | 〃 | 4 |
| R106,206 | 〃 -221 | 〃 | 220Ω | 〃 | 2 |
| R107,207 | 〃 -391 | 〃 | 390Ω | 〃 | 2 |
| R110,210,128,228, 129,229,139,239, 143,243 | 〃 -473 | 〃 | 47kΩ | 〃 | 10 |
| R111,211 | 〃 -103 | 〃 | 10kΩ | 〃 | 2 |
| R112,212,116,216 | 〃 -102 | 〃 | 1kΩ | 〃 | 4 |
| R113,213 | 〃 -121 | 〃 | 120Ω | 〃 | 2 |
| R115,215 | QVP8A0B-054 | V. Resistor | 50kΩ | 〃 | 2 |
| R117,217 | QRD143K-224 | C. Resistor | 220kΩ | 〃 | 2 |
| R118,218 | 〃 -394 | 〃 | 390kΩ | 〃 | 2 |
| R120,220 | 〃 -472 | 〃 | 4.7kΩ | 〃 | 2 |
| R121,221 | 〃 -561 | 〃 | 560Ω | 〃 | 2 |
| R122,222,124,224 | 〃 -123 | 〃 | 12kΩ | 〃 | 4 |
| R123,223 | 〃 -223 | 〃 | 22kΩ | 〃 | 2 |
| R125,225 | 〃 -821 | 〃 | 820Ω | 〃 | 2 |
| R126,226 | 〃 -822 | 〃 | 8.2kΩ | 〃 | 2 |
| R127,227 | 〃 -562 | 〃 | 5.6kΩ | 〃 | 2 |
| R130,230 | 〃 -471 | 〃 | 470Ω | 〃 | 2 |
| R131,231 | 〃 -181 | 〃 | 180Ω | 〃 | 2 |
| R132,232 | 〃 -332 | 〃 | 3.3kΩ | 〃 | 2 |
| R133,233 | 〃 -682 | 〃 | 6.8kΩ | 〃 | 2 |
| R134,234 | QVP8A0B-013 | V Resistor | 1kΩ | B | 2 |
| R135,235 | QRD143K-2R7 | C. Resistor | 2.7Ω | ¼W | 2 |
| R137,237 | 〃 -151 | 〃 | 150Ω | 〃 | 2 |
| R138,238,142,242 | QVP8A0B-024 | V Resistor | 20kΩ | B | 4 |
| R140,240 | QRD143K-393 | C. Resistor | 39kΩ | ¼W | 2 |
| C102,202 | QCS11HK-331 | Ceramic Capacitor | 330PF | | 2 |
| C103,203 | QEE41EM-475 | Tantal E. Capacitor | 47μF | 25V | 2 |
| C104,204 | QEB41EM-476 | LLC E. Capacitor | 47μF | 〃 | 2 |
| C105,205 | QCS11HK-471 | Ceramic Capacitor | 470PF | | 2 |
| C106,206 | QEB41HM-474M | E. Capacitor | 10μF | | 2 |
| C107,207 | QEB41EM-336 | LLC E. Capacitor | 33μF | 25V | 2 |
| C108,208 | QCS11HK-470 | Ceramic Capacitor | 47PF | | 2 |
| C109,209 | QEW41AA-107 | E. Capacitor | 100PF | 10V | 2 |
| C110,210 | QEB41EM-105 | LLC E. Capacitor | 1μF | 25V | 2 |
| C111,211 | QEW41EA-476 | E. Capacitor | 47μF | 〃 | 2 |
| C112,212 | QEB41EM-475 | LLC E. Capacitor | 4.7μF | 〃 | 2 |
| C114,214 | QEW41CA-106 | E Capacitor | 10μF | 〃 | 2 |
| C115,215 | QEW41AA-476 | 〃 | 47μF | 10V | 2 |
| C116,216 | QCS11HJ-820 | Ceramic Capacitor | 82PF | | 2 |
| C117,217 | QFM41HJ-272 | Mylar Capacitor | 0.0027μF | 50V | 2 |
| C118,218,123,223, 124,224 | QEW41EA-475 | E. Capacitor | 4.7μF | 25V | 6 |

| Ref. No. | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|
| C119,219 | QEW41EA-336 | E Capacitor | 33μF | 25V | 2 |
| C120,220 | QFM41HK-102 | Mylar Capacitor | 1000PF | 50V | 2 |
| C121,221 | QEW41EA-106 | E. Capacitor | 10μF | 25V | 2 |
| C122,222 | " -107 | " | 100μF | " | 2 |
| C125,225 | QEW41AA-336 | " | 33μF | " | 2 |
| C126,226 | QFM41HK-182 | Mylar Capacitor | 1800PF | 50V | 2 |
| C129,229 | QEW41EA-335 | E. Capacitor | 3.3μF | 25V | 2 |
| L101,201 | TAC000324-05 | Inductor | 33mH | | 2 |
| T101,201 | T44944-001 | H.P. Trans | | | 2 |
| X101,201 | 2SA721 (TU) | Transistor | | | 2 |
| X102,202,103,203 | 2SC1327(TU) | " | | | 4 |
| X104,204 | 2SC828(RS) | " | | | 2 |
| IC105,205 | TA7066P(B) | IC | | | 2 |
| D103,203 | MA150 | Diode | | | 2 |
| D101,102,201,202 | 1S188AM | " | | | 4 |
| (Power Supply) | | | | | |
| R11 | QRD143K-272 | C. Resistor | 2.7kΩ | ¼W | 1 |
| C11,12 | QCF12HP-103 | " | 0.01μF | " | 2 |
| C13 | QEW41EA-108 | E. Capacitor | 1000μF | 25V | 1 |
| C14 | QEW41CA-477 | " | 470μF | 16V | 1 |
| C15 | QEW41AA-338 | " | 3300μF | 10V | 1 |
| X11 | 2SC828(RS) | Transistor | | | 1 |
| X12 | 2SD313(DE) | " | | | 1 |
| D11-1,-2,12-1,-2 | T30155-001 | Diode | | | 4 |
| D18 | V06B | " | | | 1 |
| ZD13 | RD10E(I) | Zener Diode | | | 1 |
| | TAR271478-01 | Heat Sink | | | 1 |
| | SPKP3008S | Screw | | | 1 |
| | WBS3000 | T. Lock Washer | | | 1 |
| (DC-DC Converter) | | | | | |
| R13 | QRD143K-182 | C. Resistor | 1.8kΩ | ¼W | 1 |
| R14 | " -220 | " | 22Ω | " | 1 |
| R15 | " -102 | " | 1kΩ | " | 1 |
| C16,18 | QEW41AA-107 | E. Capacitor | 100μF | 10V | 2 |
| C17 | " -227 | " | 220μF | " | 1 |
| C20 | QFM41HJ-103 | Mylar Capacitor | 0.01μF | 50V | 1 |
| C21 | QEW41EA-476 | E. Capacitor | 47μF | 25V | 1 |
| C22 | " -477 | " | 470μF | " | 2 |
| C23 | QEW41CA-476 | " | 47μF | " | 1 |
| C24 | " -477 | " | 470μF | " | 1 |
| L11 | TAC000330-01 | Inductor | 330μF | | 1 |
| L12 | TAC000324-02 | " | 6.8mH | | 1 |
| L13 | " -04 | " | 5 6mH | | 1 |
| X13 | 2SC828(R) | Transistor | | | 1 |
| X14,15 | 2SC1384(R) | " | | | 2 |
| D19 | MA26W | Varistor Diode | | | 1 |
| ZD20 | RD22E(I) | Zener Diode | | | 1 |
| D21 | MA162 | Diode | | | 1 |
| D22 | MA161 | " | | | 1 |
| D23 | MA150 | " | | | 1 |
| T2 | TAZ271302-01 | Converter Trans | | | 1 |
| | TAS271405-01 | Converter Case (A) | | | 1 |
| | TAS271406-01 | " (B) | | | 1 |
| (Auto Stop & Mute) | | | | | |
| R16,18 | QRD143K-104 | C. Resistor | 100kΩ | ¼W | 2 |
| R17 | " -333 | " | 33kΩ | " | 1 |
| R19 | " -100 | " | 10Ω | " | 1 |
| R20,30 | " -472 | " | 4.7kΩ | " | 2 |

| Ref. No. | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|
| R21 | QRD143K-103 | C. Resistor | 10kΩ | ¼W | 1 |
| R22 | " -124 | " | 120kΩ | " | 1 |
| R23 | " -823 | " | 82kΩ | " | 1 |
| R24 | " -223 | " | 22kΩ | " | 1 |
| R27 | " -153 | " | 1kΩ | " | 1 |
| R28 | " -102 | " | 15kΩ | " | 1 |
| R29 | " -183 | " | 18kΩ | " | 1 |
| R30,37 | " -472 | " | 4.7kΩ | " | 2 |
| R32 | " -122 | " | 1.2kΩ | " | 1 |
| R35 | " -102 | " | 1kΩ | " | 1 |
| R36 | " -182 | " | 1.8kΩ | " | 1 |
| C25 | QFM41HK-104 | Mylar Capacitor | 0.4μF | 50V | 1 |
| C26 | QEW41AA-227M | E. Capacitor | 220μF | 10V | 1 |
| C27 | " -107 | " | 100μF | " | 1 |
| C28 | QEW41EM-336 | LLC E. Capacitor | 33μF | 25V | 1 |
| C29 | QFM41HK-333 | Mylar Capacitor | 0.033μF | 50V | 1 |
| C34 | QCF11HP-103 | Ceramic Capacitor | 0.01μF | | 1 |
| X16 | 2SC828(RS) | Transistor | | | 1 |
| X17 | 2SC828A(RS) | " | | | 1 |
| X18,19 | 2SA564A(RS) | " | | | 2 |
| D14,16,24,26 | MA150 | Diode | | | 4 |
| D15 | 1S188AM | " | | | 1 |
| D17 | T30155-001 or V06B | " | (10D-1) | | 1 |
| | 2SF656 | S.C.R | | | 1 |
| | E40516-001 | Tab | | | 10 |
| | A43596-001 | " | | | 2 |

## ANRS Circuit Board

Red print is shown the voltage (V) of playback mode.
(  ) voltage; at recording mode.
When you measure the voltage by tester, we recommend you to use 20kΩ/V or more impeadance tester.

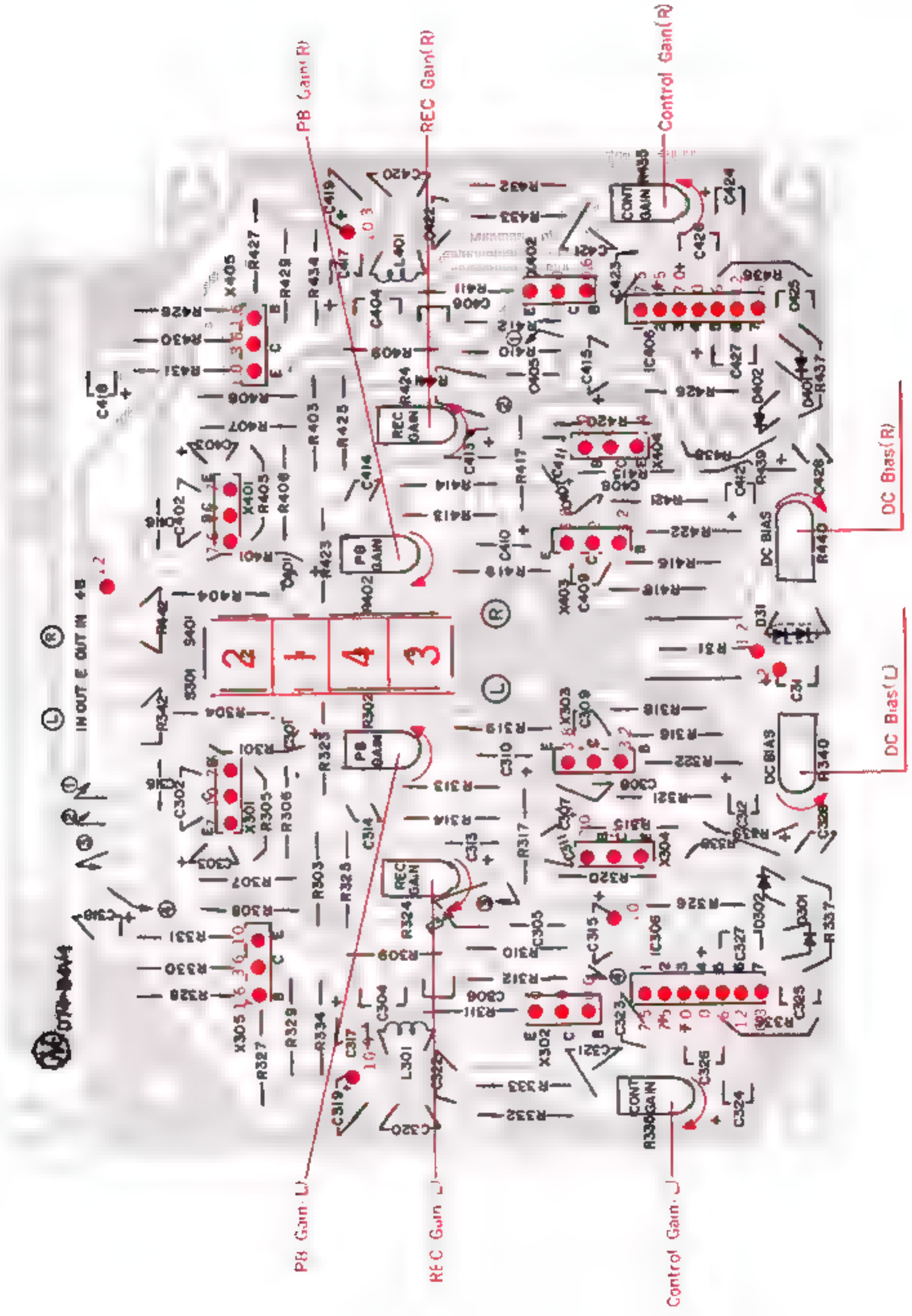



Fig. 35

## ANRS Circuit Board Parts List

| Ref. No. | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|
| | *TAA304203-01 | Circuit Board | | | 1 |
| S301,401 | QSS8201-102 | Slide Switch | | | 1 |
| | QMC0627-001 | Plug Ass'y | 6P | | 1 |
| | *QMC0427-001 | " | 4P | | 1 |
| R31 | QRD142K-153 | C. Resistor | 15kΩ | ¼W | 1 |
| R301,401 | " -273 | " | 27kΩ | " | 2 |
| R302,402,324,424 | QVP8A0B-014 | V. Resistor | 10kΩ | B | 4 |
| R303,403 | QRD142K-222 | C. Resistor | 2.2kΩ | ¼W | 2 |
| R304,404,308,408, 318,418,328,428, 338,438,339,439 | " -473 | " | 47kΩ | " | 12 |
| R305,405 | " -104 | " | 100kΩ | " | 2 |
| R306,406 | " -334 | " | 330kΩ | " | 2 |
| R307,407 | " -822 | " | 8.2kΩ | " | 2 |
| R309,409,316,416 | " -274 | " | 270kΩ | " | 4 |
| R310,410 | " -100 | " | 10Ω | " | 2 |
| R311,411 | " -562 | " | 5.6kΩ | " | 2 |
| R312,412 | " -181 | " | 180Ω | " | 2 |
| R313,413 | " -683 | " | 68kΩ | " | 2 |
| R314,414 | " -102 | " | 1kΩ | " | 2 |
| R315,415 | " -564 | " | 560kΩ | " | 2 |
| R317,417 | " -154 | " | 150kΩ | " | 2 |
| R319,419 | " -823 | " | 82kΩ | " | 2 |
| R320,420 | " -103 | " | 10kΩ | " | 2 |
| R321,421 | " -101 | " | 100Ω | " | 2 |
| R322,422 | " -332 | " | 3.3kΩ | " | 2 |
| R323,423 | " -183 | " | 18kΩ | " | 2 |
| R325,425 | " -392 | " | 3.9kΩ | " | 2 |
| R326,426,334,434 | " -122 | " | 1.2kΩ | " | 4 |
| R327,427 | " -224 | " | 220kΩ | " | 2 |
| R329,429 | " -472 | " | 4.7kΩ | " | 2 |
| R330,430 | " -681 | " | 680Ω | " | 2 |
| R332,432 | " -123 | " | 12kΩ | " | 2 |
| R333,433 | " -103 | " | 10kΩ | " | 2 |
| R335,435 | QVP8A0B-024 | V. Resistor | 20kΩ | B | 2 |
| R336,436 | QRD142K-390 | C. Resistor | 39Ω | ¼W | 2 |
| R337,437 | " -333 | " | 33kΩ | " | 2 |
| R340,440 | QVP8A0B-015 | V. Resistor | 100kΩ | B | 2 |
| R341,441 | QRD143K-332 | C. Resistor | 3.3kΩ | ¼W | 2 |
| R342,442 | " -822 | " | 8.2kΩ | ¼W | 2 |
| C31 | QEW41CA-107 | E. Capacitor | 100μF | 16V | 1 |
| C301,401,303,403 | QEB41EM-335 | LLC E. Capacitor | 3.3μF | 25V | 4 |
| C302,402 | QCS11HK-561 | Ceramic Capacitor | 560PF | 50V | 2 |
| C304,404 | QFM41HK-223 | Mylar Capacitor | 0.022μF | | 2 |
| C305,405 | " -104 | " | 0.1μF | | 2 |
| C306,406 | " -183 | " | 0.018μF | | 2 |
| C307,407 | QEE41EM-105 | Tantal E. Capacitor | 1μF | 25V | 2 |
| C308,408,321,421 | QCS11HK-471 | Ceramic Capacitor | 470PF | " | 4 |
| C309,409 | " -101 | " | 100PF | " | 2 |
| C310,410 | QEE41EM-335 | Tantal E. Capacitor | 3.3μF | " | 2 |
| C311,411 | QCS11HK-270 | Ceramic Capacitor | 27PF | 50V | 2 |
| C312,412,326,426 | QEW41AA-476 | E. Capacitor | 47μF | 10V | 4 |
| C313,413 | QEW41CA-106 | " | 10μF | 16V | 2 |
| C314,414 | QCS11HK-181 | Ceramic Capacitor | 180PF | 50V | 2 |

| Ref. No. | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|
| C315,415 | QEW41CA-476 | E. Capacitor | 47μF | 16V | 2 |
| C316,416 | QFM41HK-333 | Mylar Capacitor | 0.033μF | 50V | 2 |
| C317,417 | QEW41CA-475 | E. Capacitor | 47μF | 16V | 2 |
| C318,418 | QFM41HK-182 | Mylar Capacitor | 0.0018μF | 50V | 2 |
| C319,419 | QEW41CA-106 | " | 10μF | 16V | 2 |
| C320,420 | QCS11HJ-820 | Ceramic Capacitor | 82PF | 50V | 2 |
| C322,422 | QFM41HK-222 | Mylar Capacitor | 0.0022μF | | 2 |
| C323,423 | QEW41EA-105 | E. Capacitor | 1μF | 25V | 2 |
| C324,424 | QEW41AA-106 | " | 10μF | 10V | 2 |
| C325,425 | QCS11HK-271 | Ceramic Capacitor | 270PF | 50V | 2 |
| C327,427,328,428 | QEB41EM-105 | LLC E. Capacitor | 1μF | 25V | 4 |
| L301,401 | TAC000324-05 | Inductor | | | 2 |
| X301,401,304,404 | 2SC1327(TU) | Transistor | | | 4 |
| X302,402 | 2SD545NP-V,S | " | | | 2 |
| X303,403 | 2SA721(TU) | " | | | 2 |
| X305,405 | 2SC828(R) | " | | | 2 |
| IC306,406 | TA7066P(BC) | IC | | | 2 |
| D31 | MA26W | Varistor Diode | | | 1 |
| D301,401,302,402 | 1S188FM | Diode | | | 4 |

## Check Circuit Board

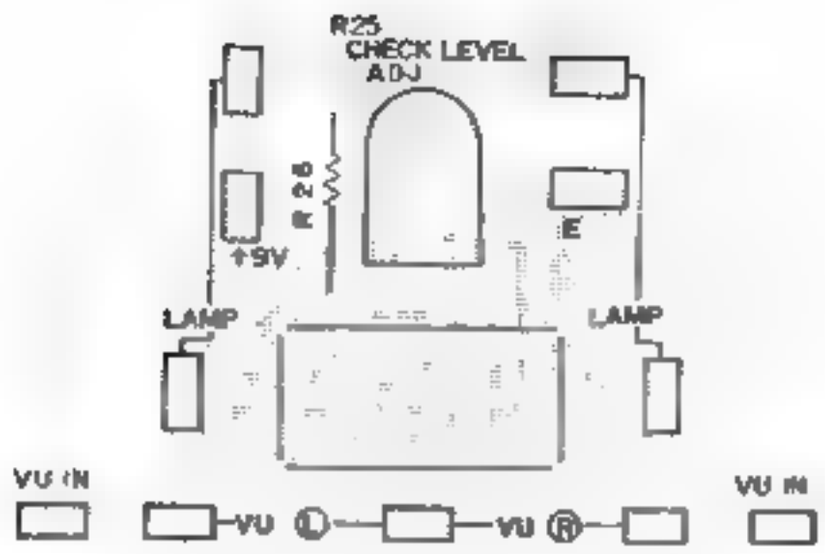



Fig. 36

### Check Circuit Board Parts List

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| | TAA271401-01 | Circuit Board | | 1 |
| | E40516-001 | Tab | | 12 |
| | QSL2318-001 | Lever Switch | for check | 1 |
| R25 | QVP8A08-024 | V. Resistor | 20kΩ B | 1 |
| R26 | QRD142K-123 | C. Resistor | 12kΩ ¼W | 1 |
| | T46729-002 | Lamp | 6.3V 70mA | 2 |

## Muting Circuit Board

Fig. 37

### Muting Circuit Board Parts List

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| | TAA271507-01 | Circuit Board | | 1 |
| | QSS4201-011 | Slide Switch | for muting switch | 1 |
| R34 | QRD143K-104 | C. Resistor | 100kΩ ¼W | 1 |
| C32 | QEW41CA-106 | E. Capacitor | 10μF 16V | 1 |
| X20 | 2SC1383(RS) | Transistor | | 1 |
| X21 | 2SC828(RS) | " | | 1 |
| | TFB271476-01 | Switch Bracket | | 1 |
| | SBSB3006Z | Tapping Screw | | 2 |
| | W8S3000 | T. Lock Washer | | 1 |

## Mic Jack Circuit Board



Fig. 38

### Mic Jack Circuit Board Parts List

| Ref No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| | TAA304402-01 | Circuit Board | for Mic jack | 1 |
| R148,248 | QRD143K-822 | C. Resistor | 8.2kΩ ¼W | 2 |
| C131,231 | QCF11HP-222 | Ceramic Capacitor | 0.0022PF | 2 |
| C132,232 | QCS11HK-821 | " | 820PF | 2 |
| R501,601 | QRD143K-102 | C. Resistor | 1kΩ | 2 |
| C101,201 | QCF41EZ-104 | Ceramic Capacitor | 0.1μF | 2 |
| | E40516-001 | Tab | | 3 |

## Switch Circuit Board

Red printed is shown the voltage (V) of playback mode.
[ ] voltage; at recording mode.
When you measure the voltage by tester, we recommend you to use 20kΩ/V or more impeadance tester.

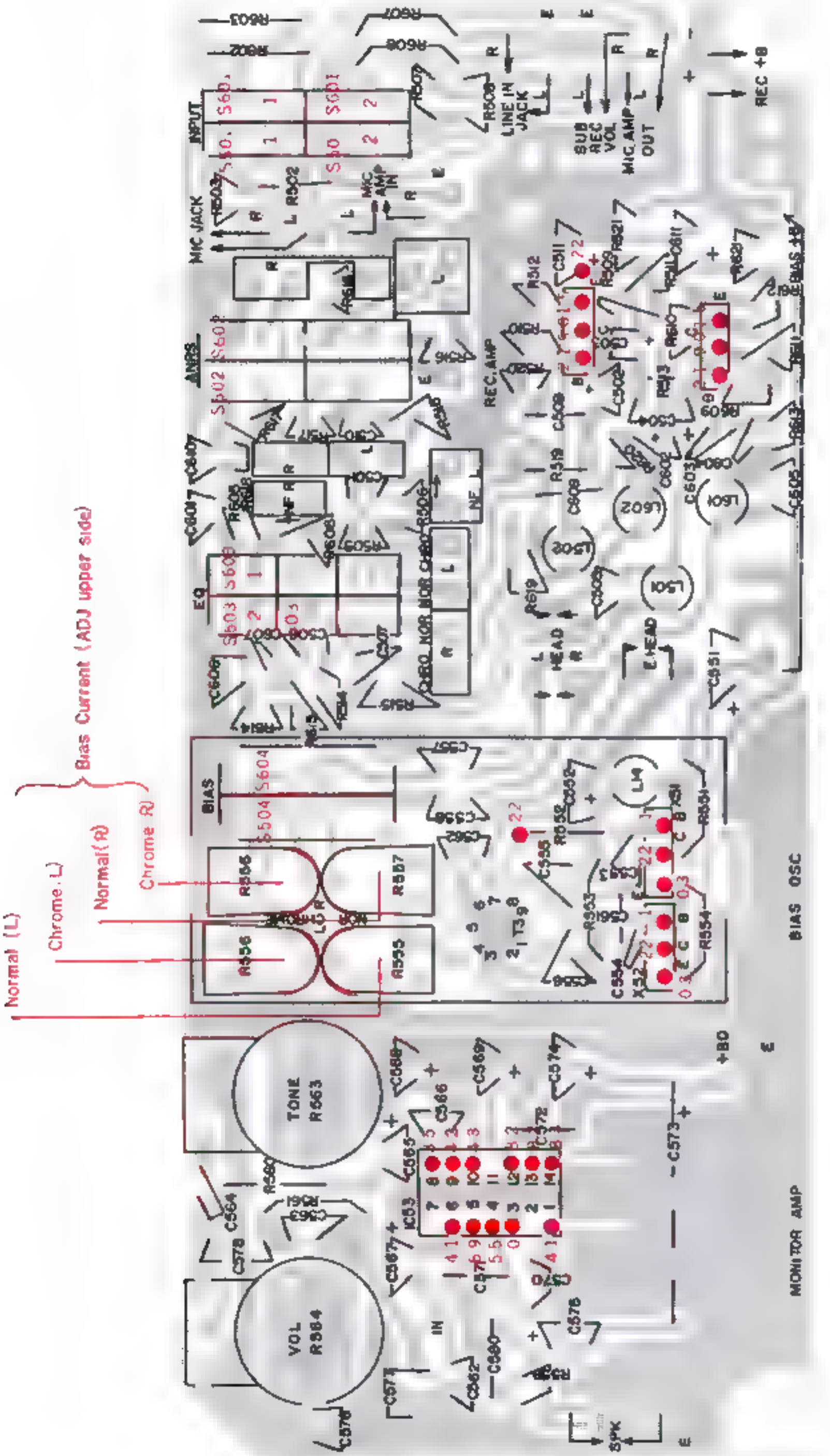


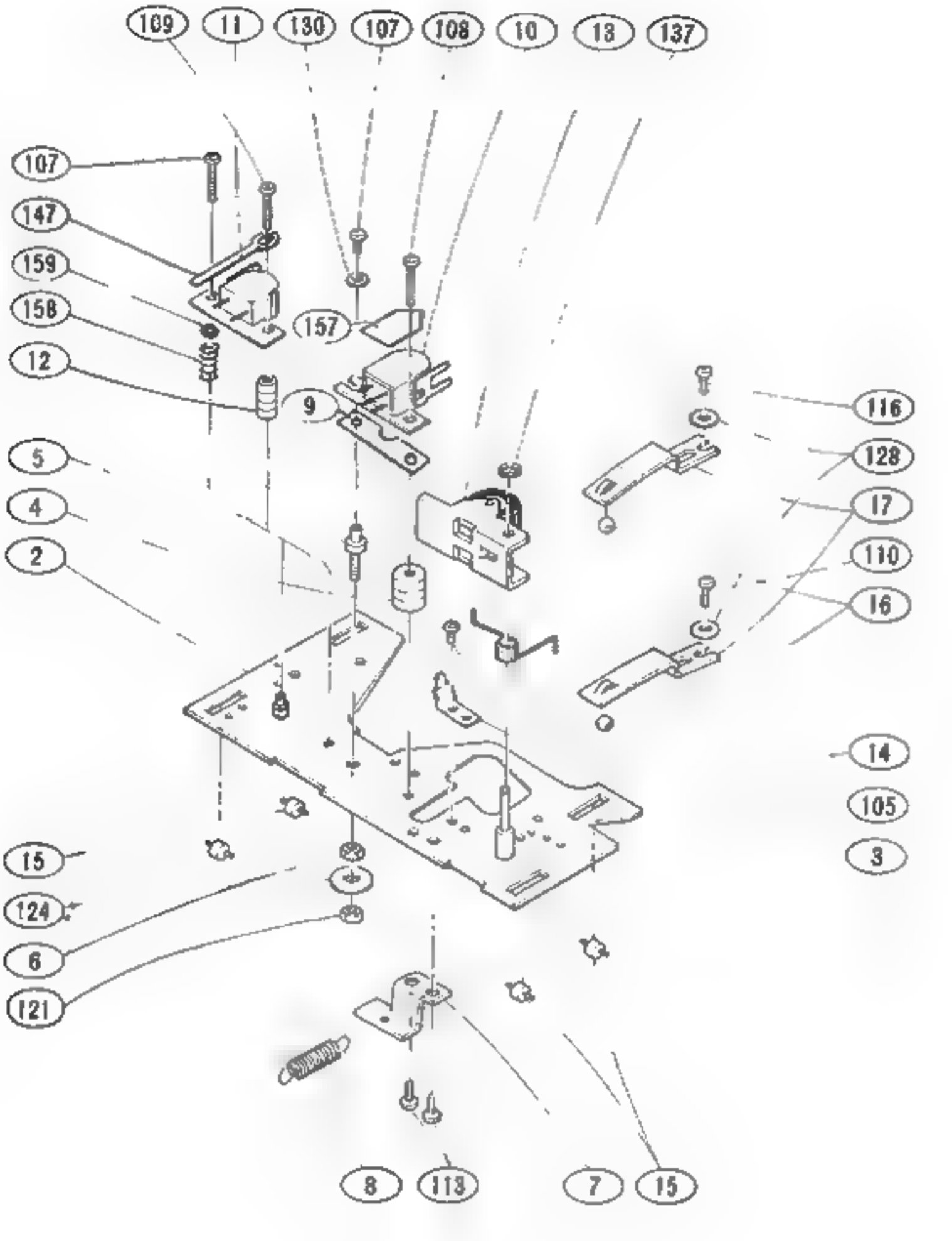

Fig. 39

## Switch Circuit Board Parts List

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| | TAA304204-01 | Circuit Board | | 1 |
| | E43727-002 | Lapping Pin | | 43 |
| | E40516-001 | Tab | | 2 |
| | EG9010-001 | " | | 1 |
| | QSL4324-001 | Lever Switch | for INPUT Select | 1 |
| | QSL4324-001 | " | for ANRS | 1 |
| | QSL2218-112 | " | for BIAS | 1 |
| | QSL6220-001 | " | for EQ | 1 |
| | LPSP2606V | Screw | for SW | 2 |
| R563,564 | QVG9A2A-024 | V. Resistor | 20kΩ for Tone, Volume | 2 |
| (Rec Amp) | | | | |
| R502 | QRD143K-122 | C. Resistor | 1.2kΩ ¼W | 1 |
| R602 | QRD142K-122 | " | 1.2kΩ " | 1 |
| R503 | QRD143K-103 | " | 10kΩ " | 1 |
| R603 | QRD142K-103 | " | 10kΩ " | 1 |
| R505,605 | QRD143K-222 | " | 2.2kΩ " | 2 |
| R506,606 | -392 | " | 3.9kΩ " | 2 |
| R507,508 | " -823 | " | 82kΩ " | 2 |
| R607,608 | QRD142K-823 | " | 82kΩ " | 2 |
| R509,609 | QRD143K-564 | " | 560kΩ " | 2 |
| R510,610 | " -823 | " | 82kΩ " | 2 |
| R511,611 | " -682 | " | 6.8kΩ " | 2 |
| R512,612 | " -821 | " | 820Ω " | 2 |
| R513,613 | " -153 | " | 15kΩ " | 2 |
| R514,614,515,615 | " -560 | " | 56Ω " | 4 |
| R516,616 | " -472 | " | 4.7kΩ " | 2 |
| R517,617 | " -564 | " | 560kΩ " | 2 |
| R518,618 | " -122 | " | 1.2kΩ " | 2 |
| R519,619 | " -103 | " | 10kΩ " | 2 |
| R520,620 | " -273 | " | 27kΩ " | 2 |
| R521,621 | " -681 | " | 680Ω " | 2 |
| C501,601 | QFM41HJ-153 | Mylar Capacitor | 0.015μF 50V | 2 |
| C502,602 | QEW41CA-106 | E. Capacitor | 10μF 25V | 2 |
| C503,603 | QEB41HM-684M | " | | 2 |
| C504,604 | QFM41HK-122 | Mylar Capacitor | | 2 |
| C505,605 | QCS12HJ-151 | Ceramic Capacitor | 150PF 500V | 2 |
| C506,606 | QFM41HJ-153 | Mylar Capacitor | 0.015μF 50V | 2 |
| C507,607 | " -183 | " | " | 2 |
| C509,609 | QFM41HK-154 | " | | 2 |
| C510,610 | -562 | " | " | 2 |
| C511,611 | QFM41HJ-152 | " | 0.0056μF " | 2 |
| L501,601 | TAC000324-01 | Inductor | 18mH | 2 |
| L502,602 | TAC000324-04 | " | 5.6mH | 2 |
| X501,601 | 2SC828A(R) | Transistor | | 2 |
| (Bias OSC Circuit) | | | | |
| T3 | TAB265401-01 | OSC Coil | | 1 |
| R551 | QRD146K-151 | C. Resistor | 150Ω ¼W | 1 |
| R552,553 | QRD142K-104 | " | 100kΩ | 2 |
| R554 | " -220 | " | 22Ω ¼W | 1 |
| R555,557 | QVP8A0B-025 | V. Resistor | | 2 |
| R556,558 | " -015 | " | | 2 |
| C551 | QEW41EA-105 | E. Capacitor | 10μF 50V | 1 |
| C552 | " -335 | " | 3.3μF " | 1 |

| Ref. No. | Parts No. | Parts Name | Remarks | | Q'ty |
|---|---|---|---|---|---|
| C553,554 | QCS11HK-391 | Ceramic Capacitor | 390PF | 50V | 2 |
| C555,556 | QFM41HK-272 | Mylar Capacitor | 0.0027μF | " | 2 |
| C557,558 | QCS12HK-221 | Ceramic Capacitor | 220PF | 500V | 2 |
| C561 | QEZ0001-472 | Polypropylene Capacitor | 0.047μF | | 1 |
| C562 | " -822 | " | 0.0082μF | | 1 |
| L14 | T40442-002 | Inductor | 1mH | | 1 |
| X51,52 | 2SC828A(RS) | Transistor | | | 2 |
| | TAS271320-01 | OSC Case (A) | | | 1 |
| | TAS271479-01 | " (B) | | | 1 |
| (Monitor Amp) | | | | | |
| R559 | QRD143K-4R7 | C. Resistor | 4.7Ω | ¼W | 1 |
| R560 | QRD142K-221 | " | 220Ω | | 1 |
| R561 | " -273 | " | 23kΩ | ¼W | 1 |
| R562 | QRD143K-471 | " | 470Ω | | 1 |
| C563 | QFM41HK-272 | Mylar Capacitor | 0.0027μF | 50V | 1 |
| C564 | " -123 | " | 0.012μF | " | 1 |
| C565 | QEW41EA-105 | E. Capacitor | 1μF | 25V | 1 |
| C566 | QCF11HP-102 | Ceramic Capacitor | 1000PF | 50V | 1 |
| C567 | QEW41CA-226 | E. Capacitor | 22μF | 16V | 1 |
| C568 | QEW41AA-227 | " | 220μF | " | 1 |
| C569 | " -106 | " | 10μF | " | 1 |
| C570,571 | QCS11HK-561 | Ceramic Capacitor | 560PF | 50V | 2 |
| C572 | QFM41HK-154 | Mylar Capacitor | 0.15μF | " | 1 |
| C573 | QEW21AA-476 | E. Capacitor | 47μF | 16V | 1 |
| C574 | QEW41AA-227 | " | 220μF | 10V | 1 |
| C575 | " -477 | " | 470μF | " | 1 |
| C576 | QCF11HP-103 | Ceramic Capacitor | 0.01μF | 50V | 1 |
| IC53 | LA4102 | IC | | | 1 |
| C577 | QCS11HK-471 | Ceramic Capacitor | 470PF | 50V | 1 |
| C578 | QFM41HK-153 | Mylar capacitor | 0.015μF | " | 1 |
| C580 | QCF41EZ-104 | Ceramic Capacitor | 0.15μF | " | 1 |
| | QMC0657-001 | Socket Ass'y | 6P | | 1 |
| | *QMC0457-001 | | 4P | | 1 |

# Mechanical Components



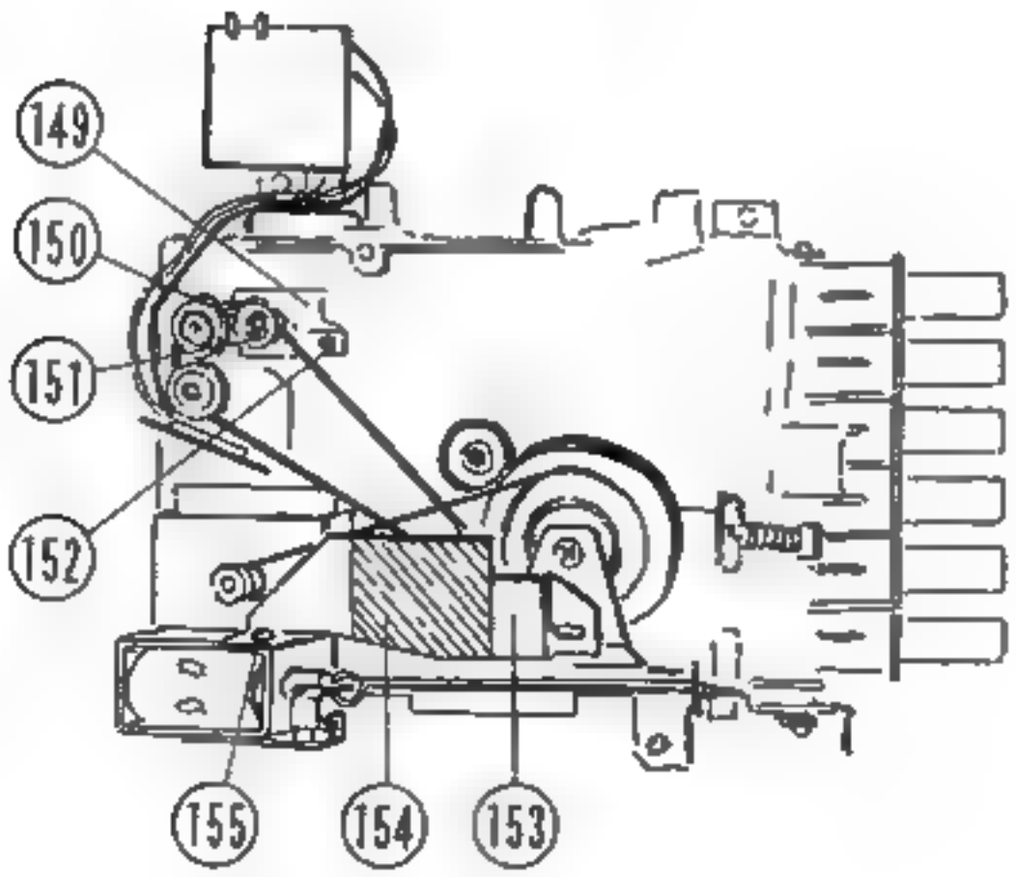




Fig. 40

# Mechanical Component List

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| 1 | T30987-00F | Chassis Base Ass'y | | 1 |
| 2 | T43081-00D | Head Panel Ass'y | | 1 |
| 3 | T43080-001 | Bracket | | 1 |
| 4 | T45799-004 | Head Stud | | 1 |
| 5 | T42045-001 | " | | 1 |
| 6 | T42046-001 | Special Nut | | 1 |
| 7 | TFB267475-01 | Head Panel Bracket | | 1 |
| 8 | 160508T | Spring | | 1 |
| 9 | 1310403T | R.P. Head Spring | | 1 |
| 10 | THC037407-0A | R.P. Head Ass'y | | 1 |
| 11 | THS265480-0A | E. Head Ass'y | | 1 |
| 12 | TFH267424-03 | E. Head Stud | | 1 |
| 13 | 3050485ZT | Pinch Roller Arm Ass'y | | 1 |
| 14 | T45138 001 | Pinch Roller Spring | | 1 |
| 15 | T42057-001 | Head Panel Roller | | 4 |
| 16 | T41615-003 | Bowl Bearing | 3mm | 2 |
| 17 | 2010303T | Head Panel Spring | | 2 |
| 18 | T42674-00A | Reel Disk Ass'y (2) | | 1 |
| 19 | TEP267464-01 | Counter Drive Pulley | | 1 |
| 20 | T42059-00C | Reel Disk Ass'y | | 1 |
| 21 | T42051-009 | Spring | | 1 |
| 22 | TGT271322-0A | Push Button Case Ass'y | | 1 |
| 23 | TJB271314-01 | Push Button Base | | 6 |
| 24 | TJB271506-0A | Push Button Ass'y | | 4 |
| 25 | " -0B | " | | 1 |
| 26 | " -0C | " | | 1 |
| 27 | T30300-135 | Spring | for Cam | 1 |
| 28 | T45809-001 | Capstan Metal Ass'y | | 1 |
| 29 | T42071-001 | Metal Stopper | | 1 |
| 30 | T30300-120 | Spring | Pause Lever — Button Lever | 1 |
| 31 | T43084-00C | Lever Ass'y | | 1 |
| 32 | 4180408T-01 | Lock Plate | | 1 |
| 33 | T43070-001 | Spring | | 1 |
| 34 | T42049-003 | " | | 1 |
| 35 | TEW267429-0D | Flywheel Ass'y | | 1 |
| 36 | TFB267474-02 | Flywheel Holder | | 1 |
| 37 | 2380905T | Thrust Bearing | | 1 |
| 38 | T42076-001 | Brake Arm Spring | | 6 |
| 39 | T42077-001 | Brake Arm Shaft | | 4 |
| 40 | T42075-001 | Brake Arm | | 1 |
| 41 | TGP000465-0B | Take Up Idler Arm Ass'y | | 1 |
| 42 | T45139-01 | Take Up Wheel Spring | | 1 |
| 43 | T42088-001 | Brake Bar | | 1 |
| 44 | TFB267511-0A | F.F. Idler Arm Ass'y | | 1 |
| 45 | T30300-120 | Spring | F.F. Idler — F.F. Lever | 1 |
| 46 | T42049-003 | " | Brake Bar - F.F. Idler Arm | 1 |
| 47 | 5850801T | " | F.F. Idler — F.F. Lever | 1 |
| 48 | T45822-002 | F.F. Arm Guide Plate | | 1 |
| 49 | T42049-023 | Spring | Brake Bar — F.F. Idler Arm | 1 |
| 50 | T42098-00D | Rew Arm Ass'y | | 1 |
| 51 | T42049-009 | Spring | Brake Bar — REW Idler Arm | 1 |
| 52 | T45717-001 | Kick Lever | | 1 |
| 53 | T42105-001 | Metal | | 1 |
| 54 | T42106-001 | Rec Rod | | 1 |
| 55 | T42107-001 | Rec Lever | | 1 |
| 56 | T42105-001 | Metal | | 1 |
| 57 | T41049-005 | Spring | | 1 |
| 58 | T40173-019 | Cushion | | 1 |
| 59 | T42109-001 | F.F. Shaft | | 1 |

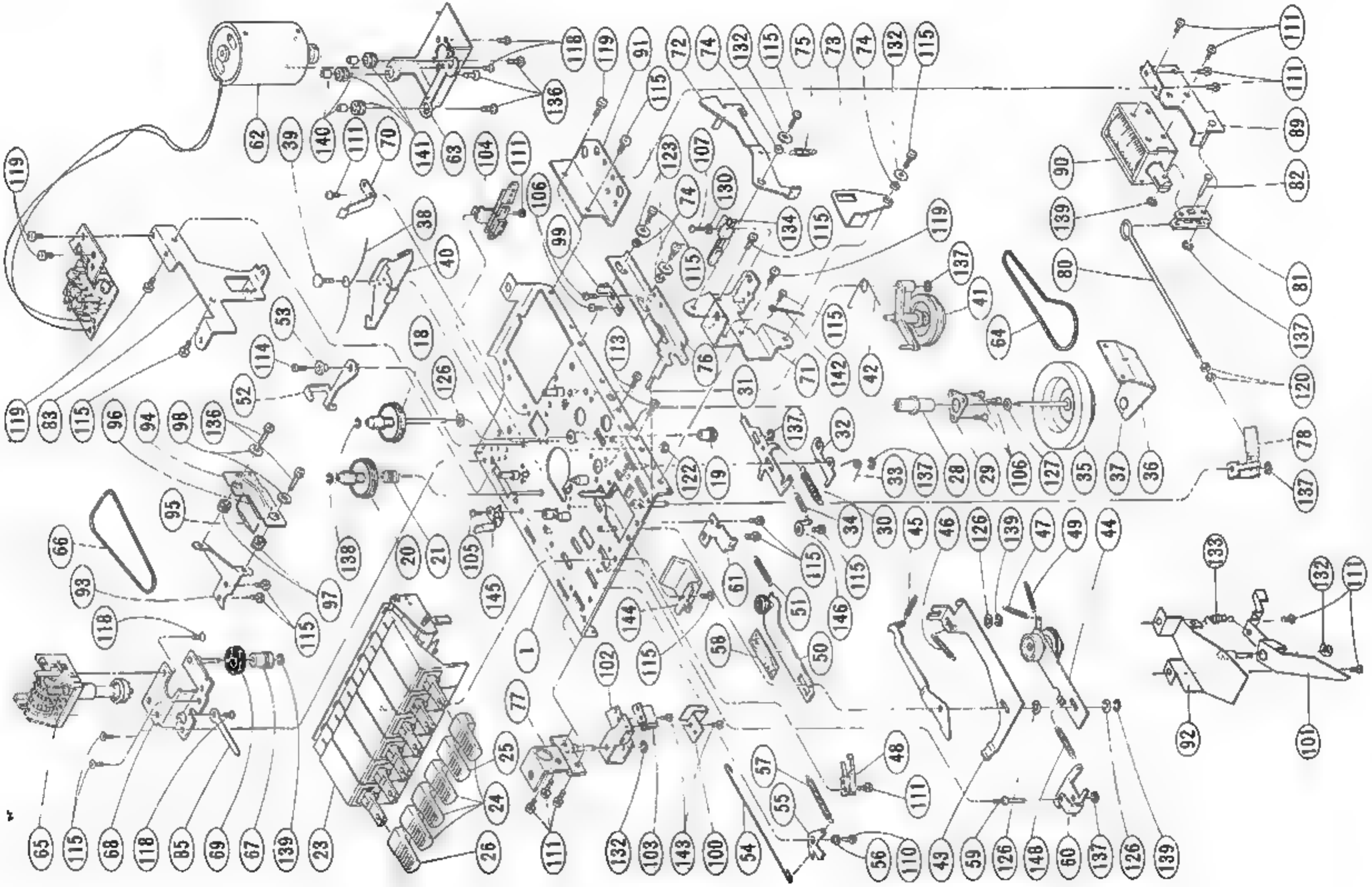


Fig. 41

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| 60 | T43654-002 | F.F. Lever (3) | | 1 |
| 61 | T43068-001 | Bracket | | 1 |
| 62 | m207-00B | Motor Ass'y | | 1 |
| 63 | TFB271487-01 | Motor Bracket | | 1 |
| 64 | TEB000464-02 | Capstan Belt | | 1 |
| 65 | *TGN304302-0A | Counter Ass'y | | 1 |
| 66 | T45786-002 | Counter Belt | | 1 |
| 67 | TGP271512-0B | Magnet Pulley Ass'y | | 1 |
| 68 | TGB271513-0A | Counter Bracket Ass'y | | 1 |
| 69 | TDZ271434-01 | Magnet | | 1 |
| 70 | T1490105T-002 | Spring Plate | for Eject | 1 |
| 71 | TFB271446-01 | Eject Lever Bracket | | 1 |
| 72 | TFB271447-01 | Eject Lever | | 1 |
| 73 | TFB271448-01 | Eject Kick Lever | | 1 |
| 74 | T30302-036 | Coller | | 4 |
| 75 | 481008T-01 | Spring | | 1 |
| 76 | TFB271449-01 | Slide Bar | | 1 |
| 77 | TFB271457-0A | Record Bracket Ass'y | | 1 |
| 78 | TFB271470-01 | Auto Stop Lever | | 1 |
| 79 | T30300-081 | Spring | for Auto Stop Lever | 1 |
| 80 | TFW271475-01 | Auto Stop Rod | | 1 |
| 81 | TFB271472-01 | Auto Stop Arm | | 1 |
| 82 | TFH271471-01 | Rod | | 1 |
| 83 | TFB271315-01 | C. Board Bracket | | 1 |
| 84 | S4709-001 | Wire Clamp | | 1 |
| 85 | 04224-0-2 | Vinyl Tube | | 1 |
| 86 | 04225-L-1.7 | " | | 1 |
| 87 | 04224-L-1.7 | " | | 2 |
| 88 | T30301-100 | Spring | for Solenoid | 1 |
| 89 | TFB271500-0A | Solenoid Bracket Ass'y | | 1 |
| 90 | T44546-001 | DC. Solenoid | | 1 |
| 91 | TFB271450-01 | Side Bracket | | 1 |
| 92 | TFB271456-0A | Bracket Ass'y | ANRS | 1 |
| 93 | TFB271413-01 | Read Switch Bracket | | 1 |
| 94 | TAA271402-01 | Read Switch C. Board | | 1 |
| 95 | TDS271409-01 | Read Switch | | 1 |
| 96 | TER271414-01 | Spacer | | 1 |
| 97 | 53492 | Rubber Bushing | | 4 |
| 98 | T30302-063 | Coller | | 2 |
| 99 | TFP271491-01 | Switch Spring | | 1 |
| 100 | TFP271490-01 | ANRS Spring Plate | | 1 |
| 101 | TFB271453-01 | Record Lever | for ANRS | 1 |
| 102 | TFB271458-01 | " | for REC/PB | 1 |
| 103 | TFP271498-01 | REC Spring Plate | | 1 |
| 104 | T30515-00B | Switch Ass'y | for Power SW | 1 |
| 105 | SPSP2003Z | Screw | | 1 |
| 106 | SPSP2004Z | " | for SW Spring | 1 |
| 107 | SPSP2006Z | " | for Power SW | 2 |
| 108 | SPSP2010Z | " | | 1 |
| 109 | SPSP2014Z | " | | 1 |
| 110 | SPSP2604Z | " | | 1 |
| 111 | LPSP2604Z | " | ANRS Spring Plate, Muting SW Motor SW, FF Arm Guide Plate | 9 |
| 112 | SPSP2605Z | " | | 2 |
| 113 | LPSP2605Z | " | Flywheel Holder | 6 |
| 114 | SPSP2606Z | " | Kick Lever | 6 |
| 115 | LPSP2606Z | " | Lead SW Bracket | 3 |
| 116 | SPSP2608Z | " | | 1 |
| 117 | SPSP2610Z | " | | 2 |

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| 118 | SPSP3004ZS | Screw | | 5 |
| 119 | LPSP3006ZS | " | | 4 |
| 120 | NNB2000 | Nut | | 2 |
| 121 | NNB2600N | " | | 1 |
| 122 | NTB2600N | " | Brake Arm | 1 |
| 123 | Q03091-130 | Washer | | 4 |
| 124 | Q03091-150 | " | | 1 |
| 125 | Q03093-115 | " | | 2 |
| 126 | Q03093-609 | " | | 4 |
| 127 | Q03093-612 | " | | 1 |
| 128 | WNB2600N | " | | 2 |
| 129 | WNS3000Z | " | | 3 |
| 130 | WNE2000 | " | Pause SW, SW Spring | 4 |
| 131 | WNB2600 | " | Lead SW Plate | 2 |
| 132 | REE3000 | E. Ring | Record Lever | 2 |
| 133 | T30300-131 | Spring | ANRS Record Lever | 1 |
| 134 | TDS000334-02 | Switch | Pause SW | 1 |
| 135 | SPSP2008Z | Screw | " | 1 |
| 136 | LPSP2610Z | " | Lead SW Plate, Motor Bracket | 5 |
| 137 | REE2000 | E. Ring | Lock Plate, Takeup Ass'y, Pinch Roller, Lever Ass'y | 4 |
| 138 | REE1200 | " | Reel Disk | 2 |
| 139 | REE1500 | " | Brake Bar | 4 |
| 140 | 581009T | Collar | | 3 |
| 141 | 581006T | Motor Rubber | | 3 |
| 142 | T43088-001 | Spring | | 1 |
| 143 | LPSP2504Z | Screw | | 2 |
| 144 | TFB271486-01 | Button Case Bracket | | 1 |
| 145 | T44181-001 | Cassette Guide | | 1 |
| 146 | 021502T | Lug | | 1 |
| 147 | T65640-001 | Wire Clamp | | 1 |
| 148 | T42049-008 | Spring | | 1 |
| 149 | TGB271514-0A | Pulley Bracket Ass'y | | 1 |
| 150 | TGP271512-0A | Magnet Pulley Ass'y | | 1 |
| 151 | REE2000 | E. Ring | | 1 |
| 152 | LPSP2004Z | Screw | | 1 |
| 153 | TAS271505-01 | Shield Plate | | 1 |
| 154 | TJN271504-01 | Spacer | | 1 |
| 155 | LPSP2603Z | Screw | | 1 |
| 156 | Q04109-0-07 | Vinyl Tube | | 1 |
| 157 | THC037417-01 | Head Plate | | 1 |
| 158 | 480408T | Head Spring | | 1 |
| 159 | WNS2000N | Washer | | 1 |

## Enclosure Assembly

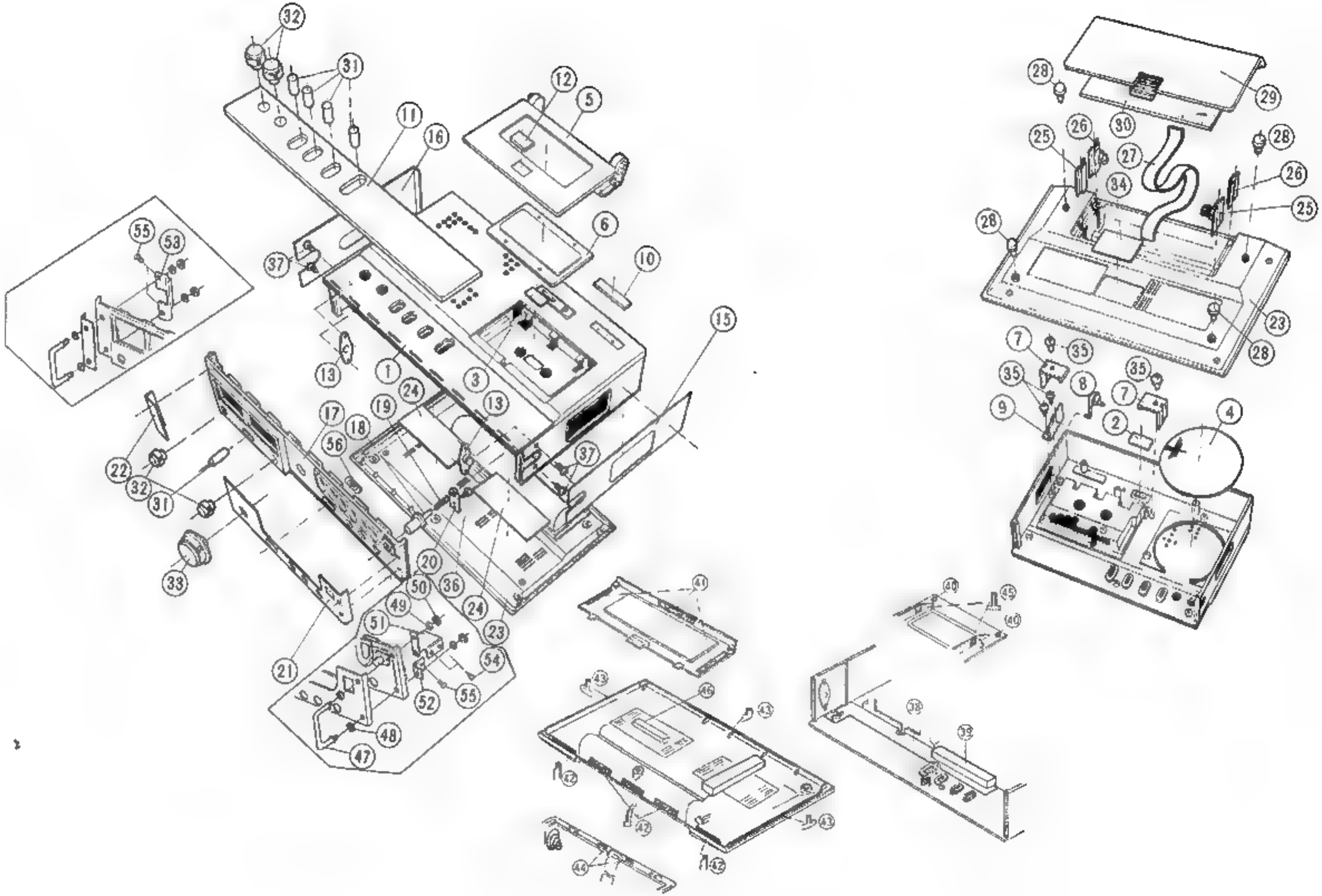


Fig. 42

– Continued from page 32 –

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| 47 | TJL271494-01 | Label (B) | for ANRS C. Board | 1 |
| 48 | QCF11HP-103 | Ceramic Capacitor | C30 0.01μF Master Volume | 1 |
| 49 | QRD143K-822 | C. Resistor | 8.2kΩ | 2 |
| 50 | QCF11HP-103 | Ceramic Capacitor | Left Bracket & Jack | 1 |
| 51 | 53492 | Rubber Bushing | | 2 |
| 52 | 50242-2 | Lug | | 1 |
| 53 | LPSP2606Z | Screw | for SW Bracket, Switch | 4 |
| 54 | TAZ000452-02 | Seal | CD-1635-2E | 1 |
| | " -03 | " | CD-1635-2B | 1 |
| 55 | TAS286401-01 | Shield Plate | for Power Transformer CD-1635-2A/B/E | 1 |
| 56 | F4932-002 | Special Washer | for Power Transformer | 2 |
| 57 | T42693-00B | Terminal | CD-1635-2B | 1 |
| 58 | FG9060-001 | Wire Connector | CD-1635-2E | 1 |
| 59 | S4709-002 | Wire Clamp | CD-1635-2B | 1 |
| 60 | SPKP3008S | Screw | for Heat Sink | 1 |
| | | | Terminal, CD-1635-2B | 2 |
| 61 | SPBP2610B | " | for AC Jack, CD-1635-2B/E | 2 |
| 62 | TAA305459-01 | C. Board | for PIN Jack | 1 |
| 63 | TFB288401-01 | Socket Bracket | CD-1635-2U | 1 |
| 64 | LPSP3006Z | Screw | for Bracket, CD-1635-2U | 2 |
| 65 | QMC0306-001 | Plug Ass'y | CD-1635-2U | 1 |
| 66 | QMC0733-001 | Socket Ass'y | CD-1635-2U | 1 |
| 67 | LPSP3008ZS | Screw | for Socket, CD-1635-2U | 2 |

## Electrical Parts Except Circuit Board Parts

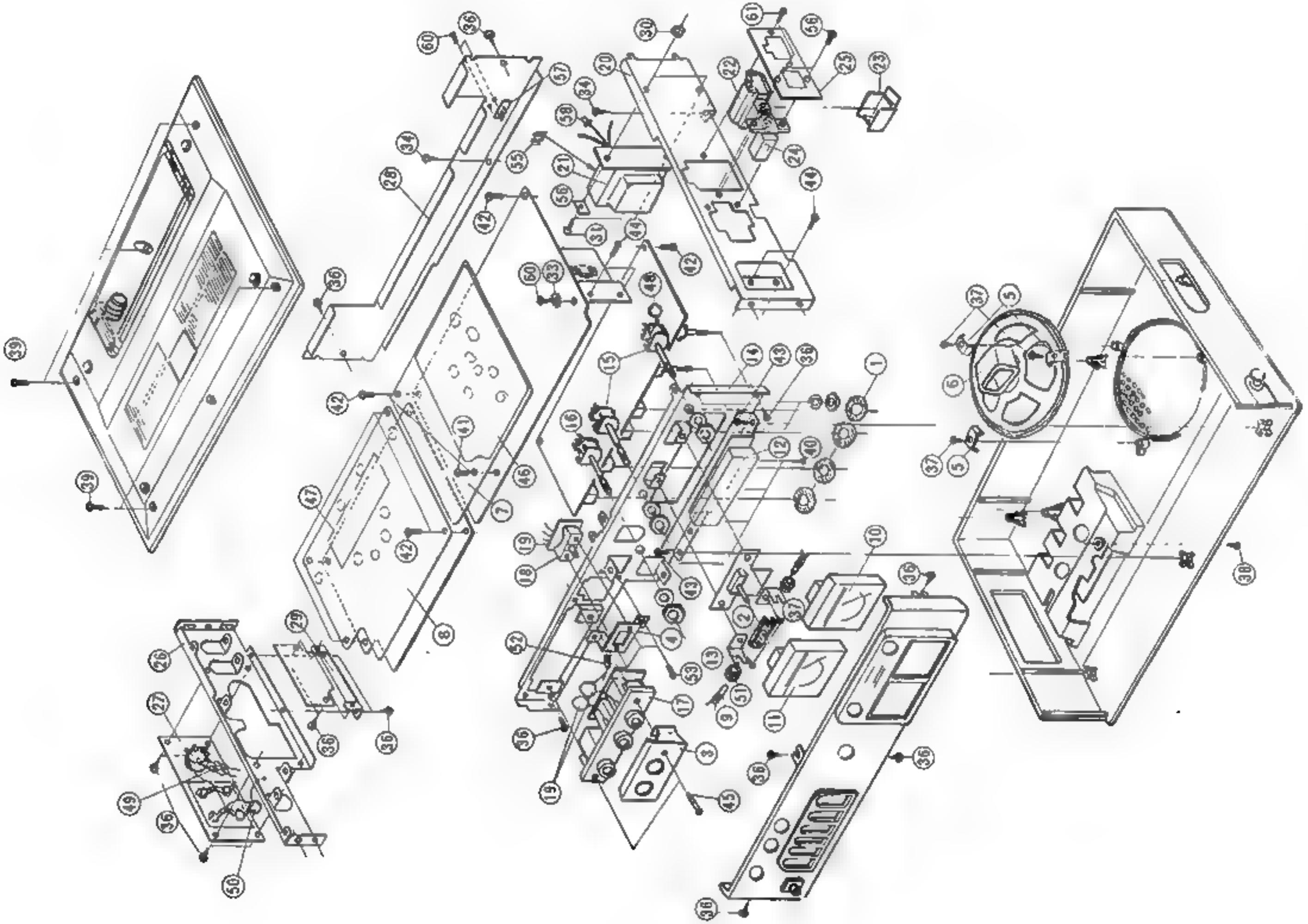
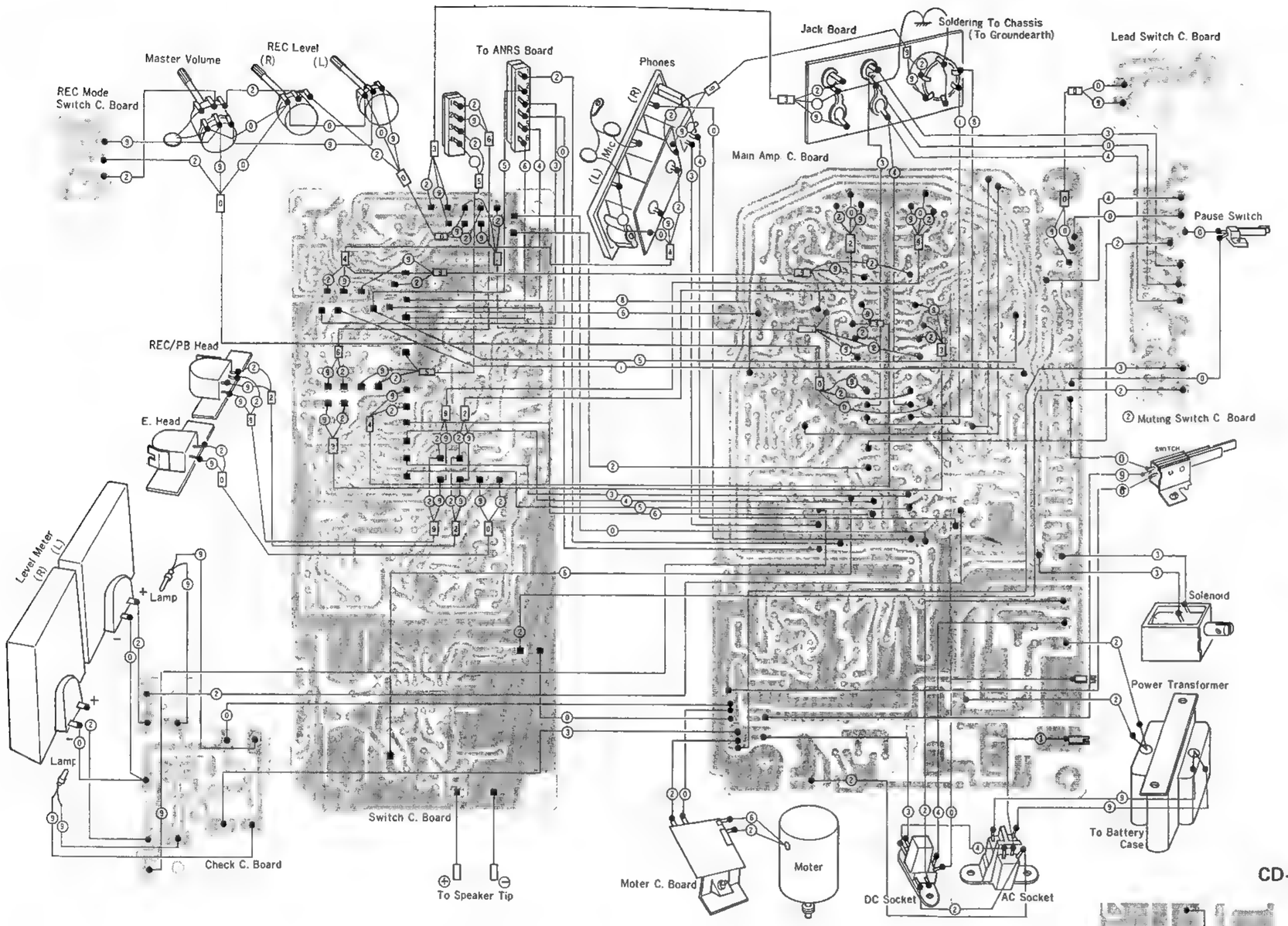


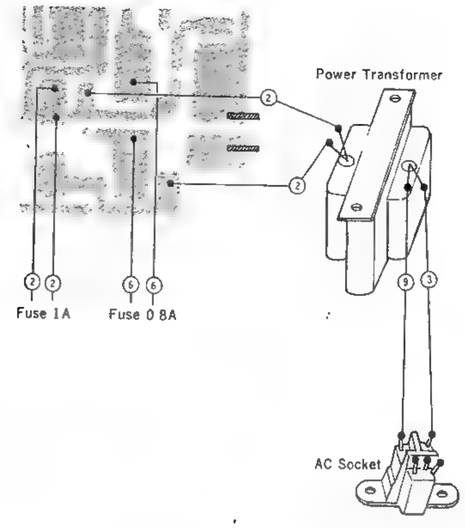
Fig. 43

# Wiring

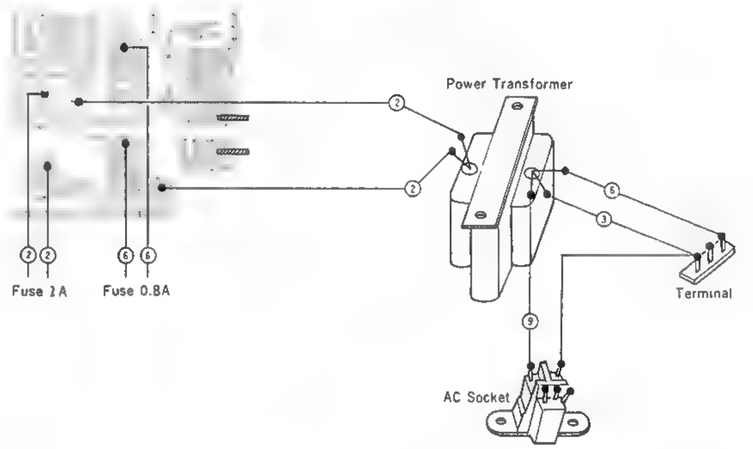



CD-1636/C

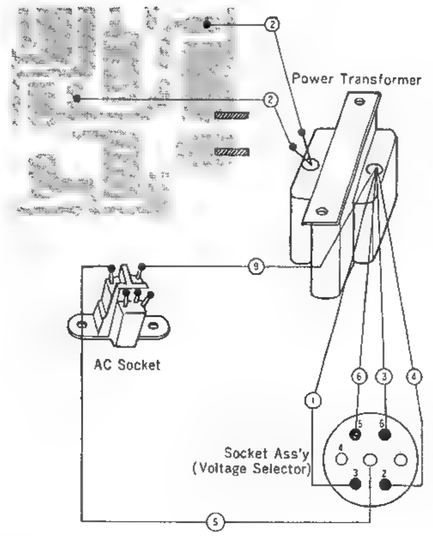
CD-1635-2A



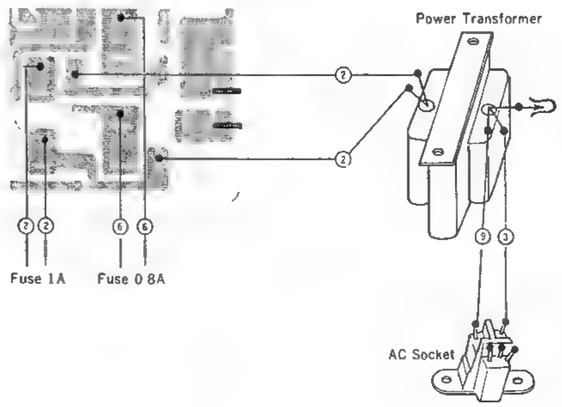

CD-1635-2B




CD-1635-2U




CD-1635-2E

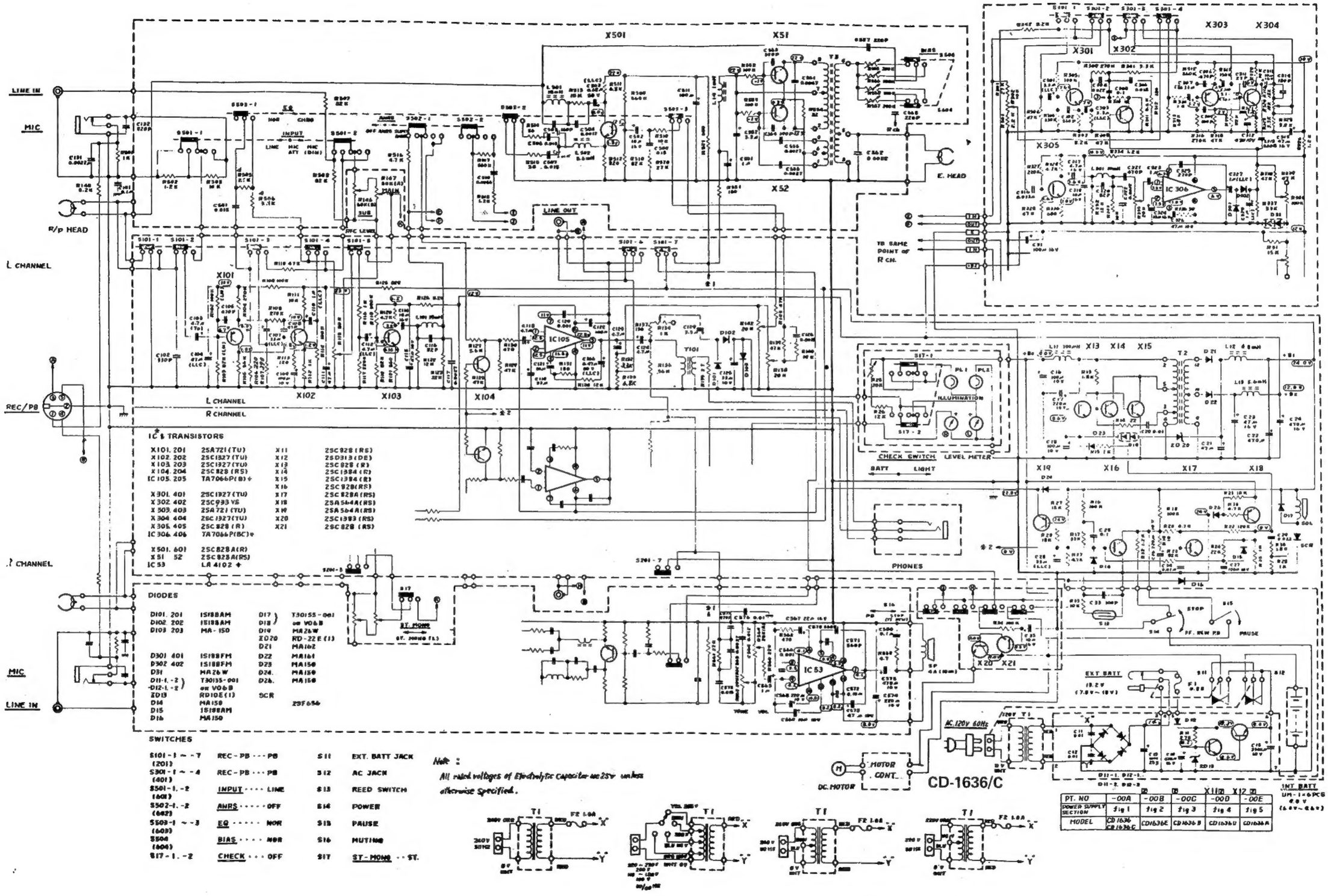



**Color code are shown below**

| | | |
|---|---|---|
| 1 | ..... | Brown |
| 2 | ..... | Red |
| 3 | ..... | Orange |
| 4 | ..... | Yellow |
| 5 | ..... | Green |
| 6 | ..... | Blue |
| 7 | ..... | Violet |
| 8 | ..... | Grey |
| 9 | ..... | White |
| 0 | ..... | Black |

Fig. 44

# Standard Schematic Diagram of CD-1635MarkII & CD-1636




| PT. NO | -00A | -00B | -00C | -00D | -00E |
|---|---|---|---|---|---|
| POWER SUPPLY SECTION | fig 1 | fig 2 | fig 3 | fig 4 | fig 5 |
| MODEL | CD1636 CD1636C | CD1636E | CD1636B | CD1636U | CD1636A |

# Accessories

| Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|
| T46965-002 | Demo Cassette | (DT-626) | 1 |
| T30046-00B | Pin Cord Ass'y | CD-1636/C, CD-1635-2A/U | 2 |
| CN201 | DIN Cord Ass'y | CD-1635-2B/E | 1 |
| T47796-00B | Head Cleaning Stick | | 2 |
| AP4056A-024 | Envelope | for H.C. Stick | 1 |
| TLT000429-01 | Caution Card | | 1 |
| QMP2540-183 | Power Cord | CD-1635-2A | 1 |
| QMP9017-006 | " | CD-1635-2B | 1 |
| QMP1240-183 | " | CD-1636/C | 1 |
| QMP3950-183 | " | CD-1635-2E | 1 |
| QMP7640-183 | " | CD-1635-2U | 1 |
| TLC271319-08 | Band Ass'y | | 1 |
| TJL000476-02 | ANRS Seal | | 1 |
| TJL000477-02 | Super ANRS Seal | | 1 |
| T7405E | Instruction Book | CD-1636 | 1 |
| T7446EGF | " | CD-1635-2A/B/E/U | 1 |
| T7566EF | " | CD-1636C | 1 |
| T30994-037 | Feature Tag | CD-1636 | 1 |
| BT20029 | Warranty Card | CD-1635-2A | 1 |
| TLT052401-01 | Warning Label | CD-1635-2A/B/E | 1 |
| TLT000443-01 | Seal | CD-1635-2A/B/E/U, CD-1636/C | 1 |
| BT20013 | Guarantee Certificate | CD-1635-2B | 1 |
| QZL1002-003 | Warning label | for P. Cord, CD-1635-2B | 1 |
| TLT000462-02 | B.S. Caution | for 2-cove Cord, CD-1635-2B | 1 |
| T46328-003 | Caution Card | CD-1635-2B | 1 |
| T46328-001 | " | CD-1635-2U | 1 |
| BT20025 | Warranty Card | CD-1636C | 1 |
| T44362-001 | CSA Marker | CD-1636C | 1 |
| TLT279401-01 | Caution Label | CD-1635-2E (for French market) | 1 |
| QZL1031-001 | SEV Seal | CD-1635-2E | 1 |
| TLT279402-01 | SS Label | CD-1635-2E | 1 |

# Packing

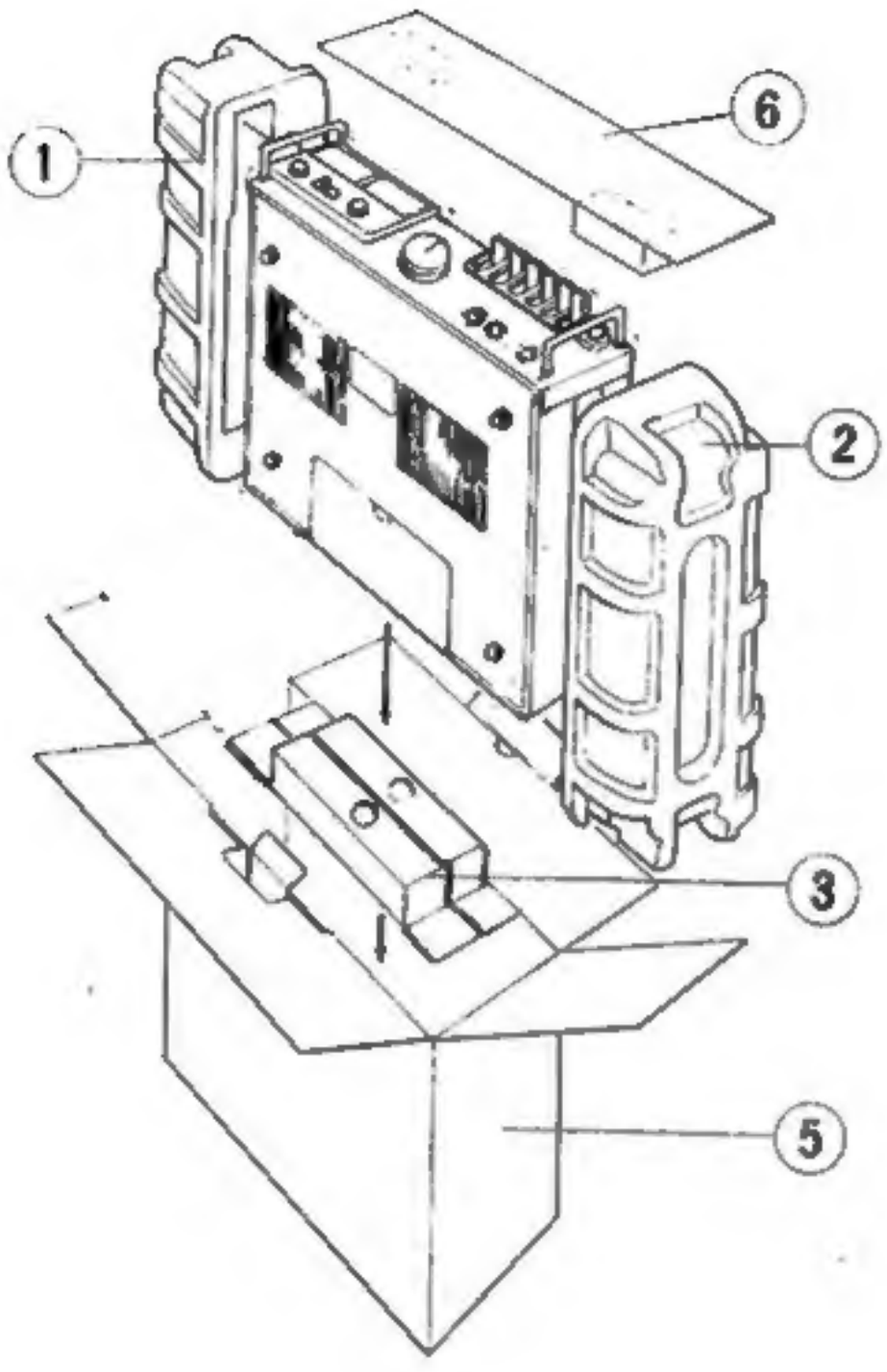



Fig. 45

## Packing List

| Ref. No. | Parts No. | Parts Name | Remarks | Q'ty |
|---|---|---|---|---|
| 1~5 | *TKB271323-0C | Packing Case Ass'y | | 1set |
| 1 | *TKC271104-01 | Cushion (L) | Left | 1 |
| 2 | *TKC271105-01 | " (R) | Right | 1 |
| 3 | *TKB271323-04 | Battery Case | | 1 |
| 5 | *TKB271323-08 | Case | | 1 |
| | T6800-00Q | Envelope | for Set | 1 |
| | AP4056A-046 | " | for Power Cord | 1 |
| | AP4056A-077 | " | for Instruction Book | 1 |
| 6 | *TKC304422-01 | Cushion | | 1 |

JVC

VICTOR COMPANY OF JAPAN, LIMITED

RADIO & RECORDING MACHINE DIVISION

Printed in Japan
— 5105 — O —